AMERICAN RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, Editor.

ESTABLISHED 1831.

PUBLISHED WEEKLY, AT No. 136 NASSAU ST., NEW YORK, AT FIVE DOLLARS PER ANNUM IN ADVANCE.

SECOND QUARTO SERIES, VOL. VII., No. 1] SATURDAY, JANUARY 4, 1851. [WHOLE No. 768 VOL. XXIV.

ASSISTANT EDITORS,
J. T. HODGE, *For Mining and Metallurgy.*
GEN. CHAS. T. JAMES, *For Manufactures and the Mechanic Arts.*

PRINCIPAL CONTENTS.

European and North American Railway 1
Penobscot and Kennebec Railroad 1
Mercantile Tonnage of the United States 2
Incrustation of Boilers 3
Mr. Benton's Pacific Railroad Bill 3
Atlantic and Missississeppi Railroad 4
Population of Wisconsin 4
" New York City 4
Metals of the United States 4
South Western Railroad 5
Auburn and Ithica Railroad 5
Lockages on the Erie Canal 5
Finances of Pennsylvania 5
Tour of Europe 5
Stock and Money Market 6
Improved Railroad Frog 7
Railroad in 1850 7
Pacific Railroad—Mr. Whitney 10
Baltimore and Ohio Railroad 12
Returns of New York Railroads 14
On the Form of Railroad Axles 15
Internal Improvements in the State of New York 16
Enlargement of the Erie Canal 16

American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & Co., 136 NASSAU ST.

Saturday, January 4, 1851.

European and North American R.R.

No project ever put forth upon this continent has made such progress in so short a time after its inception, as the "*plan for shortening the time of passage between New York and London.*" No one has ever been received with such unquestioned favor, in both Europe and America, from all parties, and from classes of people including the most influential presses of Great Britain and Ireland. Our foreign exchanges have given it more attention than any American scheme that has transpired.

Herapath's Railway Journal, the leading paper devoted to the railway interest in England, published entire the plan as set forth in the Petition to the Legislature of Maine, with the names of the committee who signed it, and fullest endorsement of the scheme has appeared in all the leading London journals.

There has been but one question raised, tending in any degree to call in question the correctness of he propositions laid down in the original plan—that in regard to the Packet Station on the coast of Ireland. Cork, Valencia, Berehaven, Crookhaven, and the Shannon, have started in the race of competition with Galway to secure this boon, and a commission has been ordered by the British government to examine and report upon the best harbor on the Irish coast as the station for the American packet ships.

The *London Illustrated News*, in giving an account of the scheme, published the resolutions adopted at the Portland Convention, and furnished an engraving, giving a view of Louisburgh harbor, and strongly urging Louisburgh as the station for the ocean terminus on the American side.

The British government can never be expected to do any thing directly in aid of the scheme, but the indications are favorable for valuable grants in the way of permanent mail contracts, and for assistance in aid of emigration. All British North America is aroused to action in aid of the scheme. The Board of Works of Canada have issued a map illustrating their own public works, as relating to the course of trade, from the same idea as that shown in the original plan alluded to, and from the public press of Canada there is a general and hearty support of the scheme. In Nova Scotia and New Brunswick the question of the railway is the absorbing topic, and the meeting of their Parliaments is only wanting, for some definite action on the part of each.

In the State of Maine, the measure begins to assume a shape, of active confidence, on the part of the people generally. Measures are already far advanced toward maturity that shall secure the completion of the line from Portland to Bangor—leaving 90 miles only, on the part of Maine, to be built. Those who know anything of the enterprise of that State, will be certain that she will not be behind hand in the work of carrying it forward to the boundary of New Brunswick. We have alluded to this matter in another part of our paper in connection with the Bangor and Waterville road.

The difficulty in carrying out the plan of this work is, the vast extent of country under different loyalties, over which it must pass, and the necessary labor in keeping all parts of the plan in subjection to the great idea lying at the bottom of the whole. To have awakened and kept in active cooperation such vast and remote interests as this scheme has exerted, requires a bold and comprehensive outline, and an incessant attention to details.

The only fear as to the success of the scheme is to be found in the peculiar circumstances of the Lower Provinces. If New Brunswick and Nova Scotia will follow the example of Maine, and give the parties in management a free and liberal charter, the road can be built without aid from either government, and in spite of all the indifference the home government, or that of the colonies, may entertain.

We advise the friends of the measure to ask for nothing but a charter from Nova Scotia or New Brunswick at the outset. Let the markets of New York and of London be tried at the right time, and in the right way. Let both the British and American public be first appealed to, and the necessary contracts for carrying the mails, and for the transportation of emigrants, be secured, before lands or guarantees from the Provincial governments are asked. If there is anything in railway statistics susceptible of mathematical demonstration, it is the fact, that a railway on the shortest route, in point of time, between Europe and America, must hereafter be THE GREAT MONOPOLY of the world.

Maine.

Penobscot and Kennebec Railroad.—We learn that at the meeting of the directors of the Penobscot and Kennebec railroad, held at Waterville on the 29th ult., there was a very full attendance on the part of the friends of the road throughout the State. In our paper of the 21st of December, we spoke of the importance of this line, and pointed out the striking advantages of its position. The event has fully justified our predictions. The Atlantic and St. Lawrence, the Androscoggin and Kennebec, and the Kennebec and Portland railway companies were represented at this meeting by influencial commitees of their respective boards of directors. There was also a large attendance of the friends of the respective rival routes between Bangor and the Kennebec river. Arguments were made by the several parties interested, and tenders of stock—of the right of way were made, and various guarantees proffered by the different companies likely to be affected by the decision of the board of directors. The decision of the directors was made on the 28th ult., after full discussion of all the points raised.

The line of the road was located from point

near the Commercial Hotel in Bangor, through Carmel, Newport and the Sebasticook valley, crossing the Kennebec river at the College Narrows in Waterville, to a point of easy connection with the Androscoggin and Kennebec railway, and from thence to Augusta, on the west side of the Kennebec river, to a point near the proposed depot of the Kennebec and Portland railway. The distance from Bangor to Waterville upon this line is 55 miles, and from Waterville to Augusta, a fraction short of 20 miles further. This location gives the Penobscot and Kennebec railway company the chance to connect with either or both of the above named roads at their option.

It is a great point for the people of Bangor to secure over their road an uninterrupted line from that city to Portland. To do this by way of the Lewiston and Waterville road, requires an arrangement with two companies, but by the way of Augusta with but one. In order to place themselves on equal terms, the roads on the broad gauge propose to unite and take lease of the Bangor road jointly, as intimated by us as a probable consequence of their position. A proposition from the Kennebec and Portland railroad to join in this arrangement may yet lead to an union of interests, heretotore in opposition.

Such a consummation among the friends of the railway interest in Maine would at once give great power and a fresh impulse to all the interests of the State, and secure at an early day the completion of the European and North American railway on the part of Maine. It seems to us that the position of railway affairs in Maine at the present time is one of far greater promise than at any former period.

The State of Maine is by far the most interesting field for railway enterprise in New England, if not equal to any Northern State. The extension of the proposed line from the Kennebec river to the borders of New Brunswick will give a great trunk line across the entire breadth of the State, a distance of 280 miles from the State-line of New Hampshire. The influence of such a line of railway, passing through many of the principal towns, and bringing Portland and Bangor within five hours of each other, will give a fresh impulse to every branch of enterprise—awaken new agencies now dormant and overlooked in the valleys of the hundred streams which it must cross, from Kittery to Calais, and unite with it, on either side contributions from innumerable branch lines of railway yet to be built.

It is to be hoped that the parties now holding the power will so arrange all the pending questions in issue, as to contribute as far as possible to such a result. An abiding and even an increasing interest in whatever concerns the prospects of our native State, and some acquaintance with the leading parties engaged in the public enterprises of Maine, induce us to speak with so much boldness and freedom.

An advance of credit on the part of the other roads by a lease of the line as fast as built, paying 6 per cent upon its cost, is virtually advancing this amount of capital in aid of the line. A stock, or the company's bonds on fifteen years, guaranteed by six times the amount of capital required to build it, upon a line that will never suffer from competition, will make the stock or bonds of the Penobscot and Kennebec railway company of equal credit as the best securities in New England. Such a stock as that, will command money in any of the large markets.

Commerce of the United States.

The following table sets forth the number and class of vessels built, and the tonnage thereof, in each State and territory of the United States, for the year ending June 30, 1850.

STATES.	Class of vessels. Ships.	Brigs.	Schooners.	Sloops and canal boats.	Steamers.	Total No.	Total tonnage.
Maine	127	75	115	3	6	326	91,211
New Hampshire	8		2			10	6,914
Vermont					1	1	77
Massachusetts	51	19	46	3	2	121	35,836
Rhode Island	5		5	3	1	14	3,587
Connecticut	3	7	27	9	1	47	4,819
New York	26	4	50	112	32	224	58,342
New Jersey	1	1	35	17	3	57	6,201
Pennsylvania	7	1	39	107	31	185	21,409
Delaware			12	3	1	16	1,848
Maryland	16	5	125		4	150	15,964
Dist. Columbia.				8		8	288
Virginia	1	1	27		5	34	3,584
North Carolina.	1	2	23	2	5	33	2,651
South Carolina.							
Georgia			2		3	5	683
Florida			2			2	79
Alabama			3			3	113
Mississippi							
Louisiana	1		16	3	4	24	1,592
Tennessee							
Kentucky					34	34	6,460
Missouri					5	5	1,353
Illinois		2	7	3	1	13	1,691
Ohio			4	11	16	31	5,214
Michigan			5	6	3	14	2,061
Texas					1	1	105
Oregon			2			2	122
Total	247	117	547	290	159	1360	272,218

The following table exhibits a condensed view of the tonnage of the several districts of the United States on the 30th of June, 1850.

	Regist'd tonnage.	Enrol'd. & licenc'd tonnage.	Total tonn'ge of each district.
MAINE.			
Passamaquoddy	10,530 73	9,454 73	19,985 51
Machias	2,267 65	19,050 67	21,318 37
Frenchman's Bay	1,643 21	30,525 27	32,168 48
Penobscot	5,713 40	31,237 38	36,950 78
Belfast	13,869 79	31,725 48	45,595 32
Bangor	9,362 31	15,906 49	25,268 80
Waldoborough	38,483 13	57,847 25	96,330 38
Wiscasset	6,024 41	12,217 08	18,241 49
Bath	76,608 65	27,017 25	103,625 90
Portland	60,304 43	26,197 86	86,502 34
Saco	1,570 00	1,153 30	2,723 30
Kennebunk	9,101 34	2,247 82	11,349 21
York		1,361 45	1,361 45
NEW HAMPSHIRE.			
Portsmouth	14,978 92	8,117 41	23,096 38
VERMONT.			
Burlington		4,530 32	4,530 32
MASSACHUSETTS.			
Newburyport	16,213 57	7,048 29	23,261 86
Ipswich		578 39	578 39
Gloucester	2,873 08	19,601 00	22,474 08
Salem	20,316 74	8,599 34	28,916 13
Beverly		3,173 04	3,173 04
Marblehead	1,249 11	5,493 31	6,842 42
Boston	270,510 09	50,177 17	320,687 26
Plymouth	3,966 88	6,755 31	10,722 24
Fall River	2,251 08	10,850 76	13,101 84
New Bedford	119,026 45	8,933 69	127,960 09
Barnstable	5,520 32	85,581 67	91,102 04
Edgartown	5,464 26	2,145 28	7,609 54
Nantucket	25,837 80	3,174 83	29,012 68
RHODE ISLAND.			
Providence	9,177 14	7,534 64	16,711 78
Bristol	11,247 12	1,951 27	13,198 39
Newport	5,644 33	4,934 21	10,578 54
CONNECTICUT.			
Middletown	95 55	12,033 72	12,129 32
New London	23,364 23	17,120 62	40,484 85
Stonington	13,188 47	6,724 03	19,912 50
New Haven	4,994 65	10,736 70	15,731 40
Fairfield	868 35	13,960 27	24,828 62
NEW YORK.			
Champlain		2,745 74	2,745 74
Sacket's Harbor		8,123 57	8,123 57
Oswego		22,404 78	22,404 78
Niagara		732 73	732 73
Genesee		1,036 74	1,036 74
Oswegatchie		1,985 34	1,985 34
Buffalo Creek		39,679 00	39,679 00
Sag Harbor	10,953 68	4,211 69	15,165 42
Greenport	4,236 29	4,319 46	8,555 75
New York	441,336 76	394,230 80	835,867 61
Cape Vincent		2,496 92	2,496 92
Cold Spring	2,376 40	1,478 90	3,855 35
NEW JERSEY.			
Perth Amboy	133 60	21,950 82	22,084 56
Bridgetown		14,472 24	14,472 24
Burlington		7,578 67	7,578 67
Camden		9,569 32	9,569 32
Newark	77 58	6,551 05	6,628 63
Little Egg Harbor		6,182 75	6,182 75
Great Egg Harbor		14,084 14	14,084 14
PENNSYLVANIA.			
Philadelphia	64,205 10	142,292 72	206,497 82
Presque Island		7,870 31	7,870 31
Pittsburgh		44,571 30	44,571 30
DELAWARE.			
Wilmington	1,651 68	7,808 70	9,460 43
New Castle		7,259 14	7,259 14
MARYLAND.			
Baltimore	90,669 82	58,349 51	149,019 38
Oxford		12,343 46	12,343 46
Vienna		15,478 01	15,478 01
Snow Hill		9,511 51	9,511 51
St. Mary's		2,184 91	2,184 91
Town Creek		2,226 81	2,226 81
Annapolis		2,323 17	2,323 17
DIST. of COLUMBIA.			
Georgetown	2,796 19	14,214 42	17,010 61
VIRGINIA.			
Alexandria	2,887 31	5,850 49	8,737 80
Norfolk	10,542 10	13,592 79	24,134 89
Petersburgh	948 76	1,759 27	2,708 08
Richmond	3,160 80	5,297 40	8,458 25
Yorktown		4,806 70	4,806 70
Rappahannock	503 26	5,320 93	5,824 24
Accomac, C. H.		4,082 75	4,082 75
East river		4,868 61	4,868 61
Yeocomico		3,283 90	3,283 90
Cherrystone		1,232 08	1,232 08
Wheeling		5,933 70	5,933 70
NORTH CAROLINA.			
Wilmington	9,123 51	6,074 76	15,198 32
Newbern	1,518 32	3,689 25	5,207 57
Washington	1,097 61	4,605 49	5,703 15
Edenton	127 07	1,018 09	1,145 16
Camden	1,269 11	10,678 88	11,948 04
Beaufort	613 69	1,645 79	2,259 53
Plymouth	1,183 88	1,144 54	3,328 47
Ocracoke		1,428 15	1,428 15
SOUTH CAROLINA.			
Charleston	15,377 48	17,915 10	33,292 58
Georgetown	1,749 19	1,030 31	2,779 50
Beaufort			
GEORGIA.			
Savannah	10,437 16	9,293 67	19,730 83
Sunbury			
Brunwick		533 81	533 81
Hardwick			
St. Mary's	491 48	933 87	1,425 40
FLORIDA.			
Pensacola	1,221 11	572 63	1,793 74
St. Augustine			
St. Mark's		353 07	353 07
St. John's		309 72	309 72
Apalachicola		2,050 36	2,050 36
Key West	4,415 46	2,350 09	6,765 55
ALABAMA.			
Mobile	7,403 67	16,753 88	24,157 60

MISSISSIPPI.				
Pearl river.....	....	1,367 34		1,367 34
Vicksburg.....	....	460 28		460 28
LOUISIANA.				
New Orleans....	83,668 55	165,040 49		248,709 09
Teche.....	....	1,380 71		1,380 71
TENNESSEE.				
Nashville.....	....	3,776 05		3,776 05
KENTUCKY.				
Louisville.....	....	14,820 19		14,820 19
MISSOURI.				
St. Louis.....	....	28,907 47		28,907 47
ILLINOIS.				
Chicago.....	....	21,242 17		21,242 17
OHIO.				
Cuyahoga.....	....	35,315 84		35,315 84
Sandusky.....	....	7,328 49		7,328 49
Cincinnati.....	....	17,188 80		17,188 80
Miami.....	....	2,629 20		2,629 20
MICHIGAN.				
Detroit.....	....	36,893 89		36,893 89
Michilmackinac.	....	1,250 55		1,250 55
TEXAS.				
Galveston.....	415 92	2,892 88		3,308 85
Seluria.....	....	588 52		588 52
OREGON.				
Astoria.....	1,063 43	....		1,063 43
CALIFORNIA.				
San Francisco...	15,285 12	2,306 65		17,591 77
TEXAS.				
Point Isabel.....	401 35	274 28		675 63
Total....	1,585,711 2 2	1,949,743	3,535,454	23

On the Incrustation which forms in the Boilers of Steam Engines, in a letter addressed to Dr. G. Wilson, F.R.S.E. By Dr. J. Davy.

On entering on this enquiry, which I did after my return from the West Indies, in December, 1848, and after communicating a short paper to the Royal Society "On Carbonate of Lime in Sea-water," it appeared to me desirable to collect as many specimens as possible of incrustation from the boilers of steam vessels, now so widely employed in home and distant navigation. By application to companies and to friends in our seaports, as Dundee, Hull, Southampton, Hayle, Liverpool, Whitehaven, I have succeeded in procuring specimens of incrustation formed by depositions in voyages from port to port, in the British and Irish Channels and the North Sea, between Southampton and Gibraltar, in the Mediterranean and the Black Sea, and in the Atlantic Ocean, between Liverpool and North America, and between Southampton and the West Indies. I am promised specimens from the Red Sea and the Indian Ocean—but these I have not received. The character and composition of the incrustation, whether formed from decomposition from water of narrow seas or of the ocean, I have found very similar—with few exceptions, composed chiefly of sulphate lime; so much so, indeed, that unless chemically viewed, the other ingredients may be held to be of little moment, rarely amounting to five per cent. of the whole. From two specimens of incrustation from the boilers of steamers crossing the Atlantic, one of which you sent me, in which you had detected a notable portion of fluorine, judging from its etching effect on glass,—I also procured it, it was in combination with silica; and procured it also so combined from two obtained from steamers navigating our own seas, one between Dundee and London, the other between Whitehaven and Liverpool. Of this I had proof, by covering with a portion of glass or platin afoil a leaden vessel charged with about 200 grains of the incrustation mixed with sulphuric acid, and by keeping the glass cool by evaporation of water from its surface, and by supplying moisture for the condension of the silicated gas by a wet band round the mouth of the vessel. After about twenty-four hours under this process, a slight but distinct decomposition was found to have taken place, corresponding to the margin of the vessel,—a decomposition such as that produced by silicated fluoric acid gas under the same circumstances. Thus it was not dissipated by heat nor dissolved by water, and yet admitted of removal by abrasion, either entirely or in great part; the former in the instance of the platina foil, the latter in that of the glass. Besides the ingredients above mentioned, I may add that, in many instances, oxide of iron, the black magnetic oxide, was found to form a part of this incrusting deposit, collected in one or more thin layers, and further, that in some, especially of steamers navigating the narrower and least clear part of the British Channel, the decompositions presented a brownish discoloration produced by the admixture of a small quantity of muddy sediment. Incrustations so discolored, I may remark, are reported to be most difficult to detach. I have said that the incrustations, with few exceptions, were similar in their structure, and that that was crystalline;—it was not unlike the fibrous vairety of gypsum of the mineralogists. The specimens received, as might have been expected, varied very much in thickness, viz. from one line and less to half an inch. I have endeavored, by a set of queries which I have distributed, to obtain information respecting the exact time in which the incrustations were formed, and under what circumstances; but with partial success only, owing, it may be inferred, to a want of exact observation. In one instance, that of the North American mail ship Europa, which arrived at Liverpool on the 15th of November, at 4 P. M., having left Boston on the 7th of the same month at 9 A. M., and incrustation was found in her boiler of about one-fifth of an inch in thickness; and it is stated that an incrustation of about the same thickness was found on her outward voyage. This example may aid in giving some idea of the degree of rapidity with which the incrustation is produced, at least in the Atlantic, with the precaution of "blowing off" every three hours, and with the "brine pumps" kept in constant work. In other seas, especially contiguous to shores, and more especially of shores formed by volcanic eruptions, it is probable *cæteris paribus*, the rate of the deposition of the incrusting sulphate of lime will be more rapid. The result of the trials of several portions of sea water taken up on the voyage from the West Indies to England noticed in the paper of mine already referred to, are in favor of this conclusion. To endeavor to prevent the deposition of the incrusting matter or to mitigate the evil, various methods, it would appear, have been had resourse to,—some of a chemical kind, as the addition of muriate of ammonia and sulphate of ammonia to the water in the boiler, without success, as might be expected, others, of a mechanical kind, with partial success, as the introduction of a certain quantity of sawdust into the boiler, or the application of tallow, or of a mixture of tallow and plumbago to its inside, to prevent close adhesion, and the more easy separation of the incrusting matter either by percussion, using a chisel-like hammer, or by contraction and unequal expansion, by means of flame kindled with oakum, after emptying the boiler and drying it. Of all the methods hitherto used, that of "blowing off," that is, the discharging by an inferior stop-cock a certain quantity of the concentrated water of the boiler by the pressure of steam, after the admission above of an equivalent quantity of sea water of ordinary density, appears to be, from the reports made, the most easy in practice, the least unsuccessful, and the most to be relied on. But, as in the instance given of the North American steamer, it can be viewed only as a palliation. Considering the composition of the incrusting matter and the properties of its principal ingredient—the sulphate of lime, a compound soluble in water and in sea water, and deposited only when the water containing it is concentrated to a certain degree, there appears to be no difficulty theoretically in naming a preventive. The certain preventive would be the substitution of distilled or rain water in the boiler for sea water. Of this we have proof in efficacy of Hall's condenser, which returns the water used as steam, condensed, after having been so used: but, unfortunately for its practical success, the apparatus is described as being too complicated and expensive for common adoption. Further proof is afforded in the fact, that the boilers of steamers navigating lakes and rivers in the waters of which there is little or no sulphate of lime, month after month in continued use, remain free from incrustation. This I am assured is the case with the steamers that have been plying several summers successively on the lake of Windermere. And it may be inferred, that in sea-going steamers in which sea water is used in the boiler,—or, indeed, any water containing sulphate of lime, the prevention of deposition may be effected with no less certainty by keeping the water at that degree of dilution at which the sulphate of lime is not separated from the water in which dissolved. From the few trials I have made, I may remark, that sulphate of lime appears to be hardly less soluble, if at all less, in water saturated with common salt than in perfectly fresh water. This seems to be a fortunate circumstance in relation to the inquiry as to the means of prevention, and likely to simplify the problem. If these principles be sound, their application under different circumstances, with knowledge and judgment on the part of the directing engineer, will probably not be difficult. His great object will be in sea-going steamers to economise the escape of water in the form of steam, and thereby also economise heat and fuel; also, when fresh water is available to use it as much as possible; and further, to avoid using sea water as much as possible near coasts and in parts of seas where sulphate of lime is most abundant. From the incrustation on the boilers of sea-going steamers, the attention can hardly fail to be directed to that which often forms, to their no small detriment, in the boilers of locomotive railway engines, and of engines employed in mines and in the multifarious works to which steam power is now applied. These incrustations will of necessity be very variable, both in quantity and quality, according to the kind of ingredients held in solution in the water used for generating the steam. Hitherto I have examined two specimens only of incrustations taken from the boilers of locomotive engines, and a single one only from the boiler of a steam engine employed on a mine—a mine in the west of Cornwall. The latter was fibrous, about half an inch thick, and consisted chiefly of sulphate of lime, with a little silica and peroxide of iron, and a trace of flourine. The former was from one-tenth of an inch in thickness to one inch. They were laminated, of a grey color, and had much the appearance of volcanic tufa; they consisted principally of carbonate and sulphate of lime with a little magnesia, protoxide of iron, silica, and carbonaceous matter—the last two, the silica and carbonaceous matter, probably chiefly derived from the smoke of the engine and the dust in the air. From the engineer's report it would appear that the thinnest—the incrustation of about one-tenth of an inch, had formed in about a week, during which time the locomotive had run about 436 miles and consumed about 10,900 gallons of water.—*London Athenæum, for August*, 1850.

Mr. Banton's Bill for a Railroad to the Pacific.

Be it enacted, by the Senate and House of Representatives of the United States of America, in Congress assembled. That a district of territory one hundred miles wide, and extending from the western frontier of Missouri to the Pacific ocean, and corresponding as nearly as may be to the central latitudes of the United States, together with the revenue from lands and customs in California, Oregon, New Mexico and Utah so far as not required for expenditures herein, shall be set apart and reserved for openiug communications with California, Oregon, New Mexico, and Utah, by means of a central national highway from St. Louis to the bay of San Francisco, to connect with ocean navigation to that bay, with a branch of said highway to Santa Fe, in New Mexico, and a branch to the tide-water region of the Columbia river, so as to connect with ocean navigation at that point, and also a branch to the city of the Great Salt Lake, if said central highway should not in its proper course pass that city, and a breadth of fifty miles shall be set apart and reserved for the location and construction of said branch roads respectively.

Sec. 2. And be it further enacted, that the said central national highway shall consist of a system of parallel roads adapted to different modes of travel and transportation and a margin for lines of electro-telegraph wires, whereof one common road and one iron railroad shall be immediately opened and cosntructed, and such other roads shall be

hereafter opened and constructed as congress, from time to time may authorize; and in order that the said national central highway may be constructed on a scale commensurate to its importance, and adapted to the wants of present and future time, and in order to allow a convenient space for all the parallel lines of road and commerce may require thereon, a breadth of one mile shall be allowed through a reserve of one hundred miles, and the said branch roads shall equally consist of a common road and a railway, and such other roads as Congress may from time to time authorize and direct, with a margin for a line of electro-telegraph wires, and a breadth of one thousand feet shall be allowed through the reserve of fifty miles for such branch roads, each respectively; and each track for a road shall be entitled to a space of one hundred feet wide, and the telegraph line, to a space of one hundred feet wide, and when finished the said iron railway or ways, shall never be subject to any toll or tax beyond that which may be necessary to provide repairs; and the said common roads shall be forever free from toll or tax, and shall be kept in travelling order by the care and expense of the federal government or the local government if surrendered to them.

Sec. 3 And be it further enacted, that the President be authorized and requested to cause all the authentic information in possession of the government, or in its power to procure, necessary to shew the practicability of a route for said central highway, to be collected and digested into brief memoirs illustrated by topographical and profile maps, to be laid before congress as soon as possible, also, that he be authorized and requested to cause further surveys and examinations to be made, and the results laid before congress as soon possible; and for that purpose to employ as many citizen civil engineers as may be necessary.

Sec. 4. And be it further enacted, that as soon as Congress shall fix upon the route for said central highway and branches, the President shall be and is hereby authorised and requested to cause the indian title to be extinguishsd upon a breadth of one hundred miles, to cover the route of said central highway, and also to extinguish the Indian title upon suitable breadths covering the said branch roads; and the location and construction of the central highway shall immediately be commenced, both for the common road and the railway, and with a force calculated to finish the common road in one year, so as to be passible for wagons and carriages, and the railway in ten years.

Sec. 5. And be it further enacted. That as soon as the said common road is finished the same shall be a post road, and a daily mail carried thereon in wagons or coaches, or sleighs when necessary, at the rate of at least one hundred miles in twenty-four hours; and a daily horse mail for light letters and printed slips at the rate of at least two hundred miles in twenty-four hours.

Sec. 6. And be it further enacted, That as soon as said railway, or any sufficient part thereof shall be completed and fit for use, the use thereof, shall be granted for a limited time, to such individuals or companies, as shall, by contract with the government, agree to transport persons, mails, munitions of war, and freight of all kinds, public and private in vehicles furnished by themselves, over the same at such reasonable rates as shall be agreed upon, Provided, That if other roads shall hereafter become constructed on the grounds reserved for roads by this act, the same company or persons shall not be allowed to have contract for transportation or any interest, in more than one road at the same time.

Sec. 7. And be it further enacted, That military stations shall be established on the line of the central highway and its branches, at such places as the President shall direct.

Sec. 8. And be it further enacted, That donations of land, to the extent of one hundred and sixty acres, shall be made to each head of a family widow, or single man, over eighteen years of age who shall be settled on the line of the said central highway and branches, and within the bounds of the Indian claim within twelve months after the time of such extinction of title, and pre-emtion rights, to the same extent, shall be allowed to all similar settlers after twelve months, and the residue of said reserved districts, except gold mines and placers; and private claims or donations of pre-emption rights, shall be sold, and the proceeds applied to the construction of the road.

Sec. 9. And be it further enacted, That the sum of three hnndred thousand dollars, out of any money in the treasury not otherwise appropriated, shall be, and the same is hereby appropriated, and placed at the disposition of the President, to defray the expenses of carrying into effect the third and fourth sections of this act, for the collection and preparation of information and the extinction of Indian titles necessary to the selection and location of the route, for said national central highway and branches.

Sec. 10. And be it further enacted, That it shall and may be lawful for the President of the United States to contract with the Mississippi and Pacific Railroad Company for their interest in so much of said road as shall be within the State of Missouri, and to purchase the same at a price not exceeding their actual expenditures, the said purchase to be subject to the ratification of Congress.

Population of Wisconsin.

Counties.	Dec. 1847.	June, 1850.
Brown	2,914	6,215
Calumet	1,066	1,745
Manitowoc	1,285	3,702
Columbia	3,791	9,559
Crawford, Chippewa	1,409	3,113
St. Croix	1,674	624
La Pointe	367	489
Dane	10,935	16,628
Dodge	14,906	19,140
Fond du Lac	7,409	14.512
Grant	11,720	16,169
Green	6,487	8,577
Iowa, Richland	7,963	9,532
		483
Jefferson	11,574	15,323
La Fayette,	9,335	11,538
Marquette	2,261	8,642
Milwaukee	22,791	31,117
Portage	1,504	1,758
Racine, Kenosha	19,539	14,971
		10,734
Rock	14,729	20,759
Sauk	2,178	4,556
Sheboygan	5,580	8,486
Walworth	15,036	17,864
Waukesha	15,866	19,344
Washington	15,547	19,485
Winnebago	2,787	10,167
Total	210,546	305,121
Increase in two years and a half		94,575

The only county which shows a decrease since 1847, is St. Croix. Error in the last or the present census, will doubtless account for this.

The following table shows the population of Wisconsin in each of the years named:

Year.	Population.	Year	Population.
1840	30,945	1847 [Dec.]	210,546
1842	44,478	1850 [June.]	305,121
1846 [June.]	155,277		

The principle element in the rapid increase of our population [immigration from abroad] operates in each year from May to November. Hence, through the interval between the census of 1850 and that of 1847, is two years and a half, while that between 1846, and 1847 is but one and a half years each of these last returns for [1847 and 1850] shows substantially the effect of the two preceding years immigration. For the last two years the increase in the population of our State has been at the rate of 40,000 per annum.—*Milwaukee Sentinel.*

Illinois.

Atlantic and Mississippi.—The survey of Mississippi and Atlantic Railroad fiom the state line opposite Terre Haute, on the Wabash, to Illinois town on the Mississippi, opposite St. Louis, was completed on Tuesday, the 3rd instant.

This survey has been very thoroughly made by able and scientific engineers.—William H. Morrison, of Indiana, chief engineer, S. W. Hartwell, J. Lawrence, and J. Cruse, assistant engineers. The survey was accompanied through out by one of the Directors, J. V. Hedges, Esq., of Clark county, who was very successful in procuring the right of way.

The confidence in this useful enterprise is now general, and its speedy coustruction no longer doubted. From Terre Haute to the state line where our road is to unite with that of Indiana, the survey was under the supervision of Chauncy Rose, Rose, Esq., President of the Terre Haute and Richmond railroad.

A full report of the survey will be made to the Board of Directors, at an early date. We understand that the route is even more favorable than was anticipated, and for directaess and eligibility probably not surpassed in the United States.—*Greenville Jour.*

CENSUS OF NEW YORK CITY.

Comparative Population of the City of New York by U. S. Cencus of 1850, and State Census of 1845.

Ward.	1845.	1850.
First	12,230	19,775
Second	6,962	6,616
Third	11,900	12,250
Fourth	21,000	23,424
Fifth	20,362	22,691
Sixth	19,343	24.691
Seventh	20,556	32,695
Eighth	30,900	34,531
Ninth	30,907	40,675
Tenth	20,953	23,316
Eleventh	27,595	43,772
Thirteenth	22,411	28,038
Fourteenth	21,103	25,366
Fifteenth	19,422	22,547
Seventeenth	27,144	43,780
Sixteenth	40,350	52,887
Eighteenth		31,567
Twelfth	13,378	10,796
Nineteenth		18,452
Total	371,223	517,849

Increase in five years, 146,626, or nearly forty per cent.

METALS OF THE UNITED STATES.

Iron is the most abundant metallic mineral our country affords. Its value is ten times the value of gold and silver, and one-half the value of all the metals produced in the United States. Iron is found in every state in the Union.

The most valuable mine is one in Salisbury, Conn., which yields 3000 tons annually. The mines in Duchess and Columbia counties, in the state of New York, produces annually, 20,000 tons of ore; Essex county 1500 tons; Clinton 3000; Franklin 600; St. Lawrence 2000; amounting in all to more than $500,000. The value of the iron produced in the United States in 1835, was $5,000,000; in 1837, $7,700,000. In Ohio 1200 square miles are underlaid with iron. A region explored in 1838 would furnish iron sixty-one miles long and six miles wide; a square mile would yield 3,000,000 tons of pig iron, so that this district would contain 1,080,000,000 tons. By taking from this region 400,000 tons annually, a larger qnantity than England produced previous to 1829, it would last 2700 years! as long a distance certainly as man looks ahead! The states of Kentucky, Tennessee, Indiana, Illinois, Maryland and Virginia possess inexhaustible quantities of iron ore. In Tennessee, 100,000 tons are annually manufactured. Notwithstanding our great iron resources, more than one half of our cutlery, hardware, railroad iron, etc., is still imported from Great Britain.

It is supposed by geologists that the weekly supply of gold from our own mines will be equal to the demand, and that our own mines will yet be more profitable than the mines of Brazil and Columbia.

The most extensive lead mines in the world are in Missouri, where the lead region is seventy miles long by fifty wide. These mines, in 1826, produced 7,500,000 lbs, and the whole produce of the United States was 8,332,105.

It has been estimated that the quantity of iron required in England for railroads, &c., for the current year, will be about 1,260,000 tons, which it is supposed, will be equal to all that country will produce.

The quantity of lead manufactured in the United

States in 1828, was 12,311,730 pounds; in 1830, 8,332,105; and in 1832, 4,281,867 pounds.

The copper trade, until within a year or two, has not been of much importance, as the result of the efforts made were not such as to justify any great operations. But now it appears to be attracting a good deal of attention. Whether the demand for copper stock is a fair index to the value of the copper regions, remains to be seen.

It is estimated that the quantity of iron produced in the United States in 1845, was 919,100 tons, valued at $33,940,500.

New York.

Auburn and Ithaca Railroad.—A corps of engineers during the last week or two surveyed a route for a railroad from Auburn, to meet the Cayuga and Susquehanna railroad, at a point some miles east of this village. The same company of engineers have since proceeded to survey a connecting route to Little Sodus Bay.

We learn from a gentleman connected with the Cayuga and Susquehanna railroad, that there is every prospect of the immediate construction of the road from Auburn to Ithaca, and a connection of the two routes in this village.—*Ithaca Journal.*

Pennsylvania.

Population of Pittsburg.

City of Pittsburg, including Allegheny and suburbs	83,954
(Population of the same districts in 1840, according to the official returns, 31,204.)	
Remainder in Allegheny county	52,709
Total population	136,663
(Population in Allegheny county in 1840, 81,225.	

Georgia.

Southwestern Railroad.—The people in the south west will doubtless be gratified to learn that the work on the above road is rapidly progressing to completion. The grading is nearly finished—about two-thirds of the superstructure has been placed upon the track, and the work of laying the iron is now being pressed with all possible dispatch. The iron for the entire road to Oglethorpe is at the depot in this city. Several miles of it has been placed upon the track, and an engine is now duly employed in conveying it along the line. The bridges are nearly completed and the depots and water stations on a part of the route are in a fine state of forwardness.

We understand that it is the intention of those having charge of the work to open the road to Fort Valley by the first of June, and to Oglethorpe early in July. The high prices of labor and provisions have doubtless contributed materially to delay the progress of the work. We trust, however, that it may be pressed forward with the least possible delay, as the road is greatly needed, not only to facilitate the mail transportation in the southwest, but for the convenience of the planting and travelling public.—*Savannah Republican.*

Erie Canal.

Lockage at Rochester.—The whole number of eastern bound boats weighed at the Rochester Weigh Lock during the past season, was 6,983, the average freight of which was 149,994 pounds, and the total weight 1,047,412,275 pounds. The number of cargoes re-weighed passing westward, was 64; and the number of empty boats weighed, 137. There were 1,645 cargoes wholly of lumber.

The following table shows the heaviest cargoes, and the number of boats, in each year from 1840 to 1850, inclusive, except 1846:

	Heaviest Cargo.	No. of Boats.
1840	173,700	4,071
1841	174,300	4,146
1842	198,300	3,449
1843	217,712	4.356
1844	221,400	5,242
1845	225,752	5,451
1847	245,600	8,141
1848	233,400	6,344
1849	240,800	7,262
1850 (on new scales).	318,000	7,184

The following is the number of boats weighed for 1849 and 1850, average weight, &c.:

	1849.	1850.
Eastern bound boats,	7,205	6.983
Average freight, lbs.	145,617	149,994
Total weight, "	1,049,884,683	1,047,412,275
Western cargoes re-weighed,	57	64
Empty boats, re-weighed,	126	137
Cargoes of lumber,	1,337	1,645

During the past four months the new weigh lock scale built by Messrs. Duryee, Forsyth & Co., has been in use. Many tests of its accuracy have been made, from which I am fully convinced that it will indicate the true and precise weight of whatever bodies it may be necessary to place upon it. The heaviest boat and cargo yet placed upon it weighed 318,000 lbs., and while under this enormous pressure, it moved with perfect ease and freedom, showing its admirable mechanism, and its perfect adaptation to the purposes for which it was dnsigned. With the old scale, it required about fifteen minutes to weigh a boat, the most of which was consumed in getting in and out of the lock. With the new lock and scale a saving of two-thirds of the time formerly required is effected. —*Rochester Democrat.*

COMMERCE OF OSWEGO.

We copy the following statement from the Oswego Journal:

Tolls.

1850	$310,135 37
1849	280,680 04
Increase	$26,455 33

Flour, wheat and lumber cleared.

	1850.	1849.
Wheat, bush	1,552,000	1,063,490
Lumber, ft	70,173,000	48,316,000
Flour, bbls	804,746	808,307

Tennessee.

Memphis and Charleston Railroad.—The Memphis Eagle say: We understand from good authority that the preliminary surveys for this important work are nearly completed, and that the various routes surveyed have proved more favorable than was anticipated after the first reconnoissance made by the engineers. A meeting of the directors will take place in January, to decide upon the most eligible route for the road; the time and place for the meeting will be advertised in due time.

All this is wanting to ensure the earliest practicable construction of the road, is for the public to feel and manifest a proper interest in it.

State of the Cotton Manufacture.

We copy from the Transcript the following table, showing the number of spindles in the cotton mills in New England, and the number that is now idle from the depressed state of the business:

Maine	142,700	Now stopped		112,500
New Hampshire	373,000	"	"	135,000
Massach's	1,220,000	"	"	202,000
R. Island	500,000	"	"	212,000
Connecticut	250,000	"	"	53,000
	2,485,700			715,300

Finances of Pennsylvania.

The receipts into the treasury of this State for the year ending Dec. 1st, 1850, have been as follows:—

Tax on real and personal estate	$1,317,891 55
Canal and railroad tolls	1,713,848 16
Loans	270,000 00
Balance in the treasury December 1, 1849	926,207 24
Miscellaneous	1,416,461 80
	$5,644,338 75

Expenditures.

Public improvements	$1,488,799 74
Sinking fund	318,864 03
Interest on loans	2,004,714 51
Balance Dec. 1, 1850	754,252 81
Miscellaneous	1,077,707 66
	$5,644,338 75

The Tour of Europe.

During the past year the readers of the Railroad Journal have been favored with a series of letters from Europe, containing very full information in regard to the railways of England and the continent, and abounding in valuable suggestions applicable to our own country.

The writer of these letters, John M. Adams, Esq., of Portland, enjoyed unusual facilities for acquiring information; and the value of his letters may be inferred from the fact that they were copied more or less extensively in different parts of the country, and the statistics of the French, German and Belgian railways were copied into the Merchants' Magazine and the leading journals of the country. A thorough acquaintance with the French, and a competent knowledge of the Italian and German languages enabled Mr. Adams to acquire, in a briefer period than was commonly sufficient for this purpose, a tolerable knowledge of the countries through which he passed. In company with a friend, on a tour of observation and pleasure like himself, with the command of every requirement which the most ample means could secure, the period of a few months under such circumstances, would give to an active mind advantages beyond what are common to ordinary travellers.

It is with pleasure we can state, therefore, that we have the assurance that during the coming year our readers will receive further communications from the pen of Mr. Adams, leisurely drawn out from notes, taken down at the time.

In sitting down to write this, however, our purpose was to note the changes which within a few past years have occurred, in the facilities of European travel. One-fourth of the time only is now required to accomplish a tour of Europe, such as was common before the introduction of railways—and in Lord Chesterfield's time, one hundred years ago, the fashionable tourist was content with seeing Paris and the Rhine.

In recounting with Mr. Adams, the incident of travel, we were surprised to learn how much an active mind can achieve, in a seven months' time, as our readers may see from the simple narration which follows.

Mr. Adams sailed from Boston in the Europa on the 7th of November, 1849, and reached Liverpool after a passage of 10½ days. The severity of the winter led our friends to hasten towards Paris and the south of Europe. *Three* days spent in Liverpool enabled them to see something of the city, and *fourteen* days in London, gave them time to deliver letters and arrange plans for the winter.

Passing the Straits of Dover via Folkstone to Bolougne, the cars take them to Paris in about nine

hours time. A fortnight spent in Paris gave them time to do much in the way of sight seeing, and they proceeded southward towards Lyons by the railway which was then extended to Tounere.—Two days are spent in Lyons—two in Marseilles, where our travellers take an English steamer from thence to Malta, passing in sight of Corsica and Elba. A fortnight was well employed at Malta, and passing through the Straits of Messina, no longer the terrible Scylla and Charybdis, they spend sixteen days in Naples, ascending Vesuvius, visiting among other localities Herculaneum and Pompeii. Three weeks were required to see the eternal city, its remains of former grandeur and its present works of art. Rome would repay a still longer sojournment, but our travellers hastened on to Floernce, spending five days in that city, one at Leghorn, two at Genoa, two at Turin two at Milan, one at Vienna, and five days at Venice. One day is spent at Trieste, one at Laybach, where they take the rail to Vienna. Three days are spent in Vienna, now connected by railway with the whole continent of Europe. This is enough to see the manners of the Austrians. One day at Prague, two at Dresden, two at Berlin, two at Hanover, one at Brunswick, one at Dusseldorf, two at Cologne, one at Aix la Chappelle, one at Brussels, passing the field of Waterloo by the way of Valenciennes, they reach again from the north the city of Paris.

A month in Paris gives them an opportunity to hear the debates in the French Assembly, and the arguments in the courts of law, besides learning many of the peculiarities of the French metropolis. Returning to London by the way of Calais and Dover, a fortnight is attended upon the law courts and upon the sittings of Parliament at the most busy period of the session, gives one the means of contrasting the doings of the English Parliament with those of the Congress of the United States. Mr. Adams was present when Lord Campbell took his seat as Chief Justice of the King's Bench, after the retirement of Lord Denman.

Returning to Liverpool again, after a few days they attend the Chester races, proceed to Hollyhead, passing through the Britannia Tubular Bridge, crossing the St. George's Channel to Dublin, and after spending two days in Dublin, take the railway to Cork, visit the Lakes of Killarney, and after spending some days there, pass on to Mallow, thence to Dublin, thence to Belfast, visiting the Giant's Causeway, Portrush and Castle Blarney, when they embark at Belfast for Glasgow, there spending two days; they ascend the valley of the Clyde to Edinburgh. After three days in Edinburgh and vicinity, they proceed to Manchester, a second time to Chester, and thence to Liverpool. After seeing all that was worthy of attention at Liverpool, they re-embark on board the Europa for New York, and reach this city on the 27th of May, 1850.

We have thus sketched the route and the time employed in this lengthened tour of Europe. We think it is without a parallel. It seems as if space was practically annihilated, and that the Danube and the Rhine were in as convenient proximity as the Tennessee and the Wabash.

The vast collection of facts and observations, as well as the selections of works concerning the geography and the literature of the countries visited, will enable Mr. Adams to give us at his leisure notes and observations of the highest value. Few men who possess the peculiar quality for a traveller have the means or facilities requisite for acquiring information. From the ample store so well collected, we hope to distribute something of it during the present year to the readers of the Journal.

The Stock and Money Market.

The present year opens with a very boyant state of the stock market. This is partly owing to an abundance of money, affording the means of speculation, and partly to the largely increased receipts from railroads over the past year. Speculation too, is stimulated by the general prosperity which prevails, which encourages people to incur new obligations, and to trust to the continued abundance of money, when they shall mature. With the exception of an excess of importations, every branch of our industry is in the main prosperous. Production is ahead of consumption in almost every pursuit, and with the steady demand for our credits abroad, there appears to be no immediate apprehension of a change.

Fancy stocks are the thermometers of the money market, because the prices which they command indicate the "feeling" which exists in business, and have but little relation to their true value. This value is a matter of opinion, and when opinion runs in their favor, they command a price far above their real worth. When this is adverse, they sink as far below the true standard. A stock, on the other hand, which pays a stated per centage, and holds out sufficient evidence that it can do this under *all* circumstances, is very little affected by any change in the money market. A stock of known and admitted value will always find purchasers about as readily when money is scarce as when it is abundant, because when the former is the case, the risk of lending is greater The panic which a year or two since carried down the Massachusetts stocks all the way from 1 to 50 cents on the dollar, scarcely affecting the Boston and Lowel stocks, neither has the recent rise which has carried so many of these stocks back to their former position. As soon as a road satisfies the public that it can pay under all circumstances 6 per cent., it ts taken at once from the hands of the speculators and brokers, and bought up for permanent investment. The favorite foot-balls in the stock market, are these whose value is *problematical*. In this case the ingenuity of the two great opposing parties have plenty of scope; the one in exercising their imagination in inventing plausible reasons to convince people of its value, and the other, to show that it is utterly worthless. So long as its capacities remain a matter of conjecture any, thing may be predicated of it. Just in proportion as a road begins to work out its true character, as soon as order breaks in upon chaos, it ceases to be available as *fancy*. As soon as its real wocth is demonstrated by its *traffic table*, and it can no longer be affected by the schemes, the stories, or contrivances of the jobbers. "Othello's occupation is gone."

The very rapid advance for the few past months, in a large number of our stocks, is due in part to a general and uniform increased receipts, and partly to the cause to which we have adverted. The "cornering" process lies at the bottom of the advance in others. This is hardly ever attempted, and can scarcely succeed with a sound stock, as the value of such remain unaffected by any of the efforts of speculation.

The following are the prices of some of the leading New England stocks, at sales in Boston, January 2:

Shares	Eastern railroad	100¼
do	Ogdensburg railroad	39¼
do	Old Colony railroad	66¼
do	Vermont central railroal	37¼
do	do	3.b 30 d 38
do	do	b 90 d 38¼
do	do	b 45 d 38
do	Western railroad	102¼ a 102¼
do	Boston and Worcester railroad.	101¼ a 101¼
do	Cheshire railroad	64
do	Concord railroad	54¼ a 54¼
do	Vermont and Mass. railroad	31 a 30¼
do	Michigan central railroad	96
do	Boston and Maine railroad	103¼
do	Northern railroad	75
do	South shore railroad	13
do	Rutland railroad	b 4 m 60
$1000	Vermont and Mass railroad bonds	89
$2000	Portland, Saco, and Portsmouth railroad bonds	100
$4000	Rutland railroad bonds, 1853	90 a 90¼
$1000	do 1855	89
$500	Ogdensburg railroad bonds	99
	Fitchburg railroad	108¼
	Grand junction	70
	Connecticut river	81
	Vermont Central railroad bonds, 1850	91
	Boston, Concord, and Montreal railroad bonds	86¼

The following dividends were declared on some o. the leading Massachusetts stocks, payable on the 1st instant:

RAILWAY SHARES.

	Capital.	Dividend.	Amount.
Western railroad	5,500,000	4 per ct	200,000
Fitchburg	3,320,000	4 "	132,800
Boston and Lowell	830,000	4 "	73,200
Boston & Providence	3,160,000	3 "	94 800
Boston & Worcester.	4,500,000	3½ "	157,500
Taunton branch	250,000	4 "	10,000
Pittsfield & N.Adams	450,000	3 "	13 500
Eastern, Mass	2,850.000	4 "	114.000
Eastern, N. H.	492,500	4 "	19,700
P. Saco and Portsmouth	1,200,000	3 "	36,000
Manchester & Lawrence in preferred stock	250,000	4 "	10,000
Passumpsic	1,090,000	3 "	32,700
Boston and Maine	4,155,700	2 "	83,114
Michigan central	2,561,600	9 "	230,554
Vermont and Canada	Int	8 "	6,000
Worcester & Nashua	Shs 12,678	$2½ "	28,525
Total			$1,248,393

RAILWAY BONDS.

Providence	$ 6,000
Cheshire	31,437
Vermont central	23,800
Vermont and Massachusetts	28,000
Boston and Worcester	12,750
Boston and Providence	6,000
Sullivan	15,000
Grand junction	10,500
Old Colony	10,000
Dorchester and Milton	4,000
Michigan central	25,000
Rutland and Burlington	20,000
Total	$192,487

MANUFACTURING SHARES.

	Dividend.	
Nashua	3	30,000
Jackson	3	14,400
Appleton	3	18,000
Hamilton	3	36,000
Manchester mills	4	48,000
Cocheco	$21	42,000
Middlesex	3	30,000
Dwight	3	21,000
Cabot	3	15,000
New England Worsted	4	18,000
Naumkeag st mills	3	20,100
Sandwich Glass Company	3	9,000

Boston and Worcester Railroad Company.—The earnings and expenditures of this company for the the year ending November 30th, 1850, are as annexed:—

From passengers	$393,000 00
Freight	332 000 00
Rents	10,000 00
Mails	10,000 00
Reserved income of 1849	8,000 00
	$753,000 00
The running expenses were	371,452 00
Balance for dividends and reserved fund	$381,552,00

A semi-annual dividend of three and one half per cent has been declared, which, with the dividend of three per cent declared last July, on their capital stock of $4,500,000, paying the interest on their bonds issued, and deducting $10,500 for the difference between two light and old engines sold, and two new first class ones to be substituted, and providing for the renewal of twenty-two new freight cars and two platform cars, leaves a reserved income of $57,000. The construction account will also be reduced by the sale of lands and other stock about $40,000 on the main road, and increased about 15,000 on the Framingham branch. The accounts show an increase of over $5,200 per month over that of last year, or a total of $62,600 on passengers alone, with a slight increase on freight. This is over $60,000 above the highest passenger receipts of any one year.

The *Boston and Maine Railroad* has just issued their report for the year ending December 1, 1850. The entire cost of the road and equipment is $4,021,606 59—the gross receipts for the year $594,963 45, against $522,335, 51 for the previous year—the gross amount charged to expenses $309,906 34 against $329,690 61 in 1849. In 1849 the extraordinary expenses included in the foregoing, were $53,491 19—in 1850, $20,428 32. With this allowance, the current expenses of 1850 exceed those of 1849 by about $13,000, while the gross receipts are more than those of 1849 by nearly $73,000. Including ordinary and extraordinary expenses of both years, and allowing the interest paid in 1849 and charged to expenses, the net gain of 1850 is $67,336 04. Thus the net profits of 1850 are a trifle more than 7 per cent. The loss by the fire is considered 1½ per cent, and the January dividend would have been injured by that per centage only, had it not been necessary to provide for old losses, growing out of the burning of the Dover depot, and the car shops at Lowell, and of the great collision at Medford. But two per cent was divided, for the semi-annual dividend. The loss by the late fire was $67,151.

Below will be found a table of the number of foreign arrivals for the year ending January, 1851, together with the amount of duty paid on foreign merchandise for each year, wirh the exception of the last quarter of 1850, which is not yet ascertained:—

Year.	Arrivals.	Amount of Duties.
1840	1628	$2,456,926 22
1841	1790	3,226,441 47
1842	1738	2,780,186 04
1843	1716	4,491,019 82
1844	2174	5,934,945 14
1845	2305	5,213,634 00
1846	2090	4 872.570 16
1847	2739	5,448,361 82
1848	3009	4,908,827 20
1849	3111	5,037.310 84
1850	2885.....9 months	4,855,413 01
Total		$48,225,635 72

The amount collected will average for the pas 11 years about $4,500,000 per annum. This year, as will be seen, allowing an average estimate for the last quarter, the revenue will reach nearly *six millions.*

The Connecticut and Passumpsic rivers railroad company pay a dividend on the 1st January of 3 per cent., amounting to $32,700, and notwithstanding the expenditure of about $7,000 occasioned by the freshet last spring, they have a surplus left. The road is now in full operation to St. Johnsbury.

The following synopsis is from the report of the Lowell railroad company:—

The receipts of the year ending Nov. 30th, were		$406.421 00
Expenses		256,508 13
Net earnings		$149,912 87
Expended as follows:—		
Dividends July and January	$146,400 00	
Balance of interest acc't.	1,375 90	
		147,775 90
Surplus		$ 2,136 97
The balance to credit and transportation November 30, 1849, was		159,852 81
Add surplus as above		2,136 97
		$161,989 78
From which deduct the dividedd of 4 per cent., payable January 1, 1851		73.200 00
Surplus		$ 88,789 78

As compared with the previous year, the receipts show a decrease of $10,067. The diminution is in the receipts from merchandise generally, and from such passengers as have been carried in connection with other railroads. The loss upon the latter is attributed to the diversion of travel consequent upon the opening of the new lines, and that upon merchandise may be accounted for principally by the state of business in the several manufacturing establishments on the line of the road. The running expenses have been diminished $4,395 54.

Sales of stocks in New York:—

U S '67 Loan	116¾	Erie railroad	93¾
Ill Mort Bds '47,	66	Hud Riv railroad	85
Ind Canal, pfd	38	Reading railroad opg	76
Rdg Mt Bds, '70	79	K I railroad	17
Rdg Bonds	83	Harlem railroad	81¼
Penn 5s	93¼	Stonington railroad	56¾
Erie 7s, '59	106¾	Nor and Wor. railroad, opg	68¼
Erie Income	99	Morris Canal	23¾
Erie 7s, '68	108¾	Albany & Schy	97
City 5s, '70	106¾		
Del & Hud Canal	140¾		

The following are the sales of the Hudson River 7 per cent bonds made to-day. They are 7 per cent., and have ten years to run, and are secured by a second mortgage:—

Bonds Sold.	Price.	Net Product.
$214,000	96	$205,440 00
791.000	96¼	760,238 89
343,000	96¼	330,137 50
52,000	97	50,440 00
80 000	97¼	78,000 00
57,000	98¼	55.831 25
10,000	98	9,800 00
25,000	98¼	24,562 50
$1,572,000		$1,514,450 14

The tendency of this market is decidedly upwards, though the advance is chiefly confined to the securities of our our own roads; those of companies at a distance are favorably affected (through sympathy with this movement,) but to a less extent. The rates of the first sales of western securities depend upon circumstances which have little connection with their real value. This depends very much upon the manner in which it is introduced into the market. Capital always follows public sentiment, and if a security that is favorably brought forward, happens to make a good *hit*, goes to the top of the ladder at a bound; while an equally good one, for the want of same management, keeps a position from 5 to 10 per cent lower. The Ohio and Pennsylvania bonds are a good illustration of what we have said. Recent sales of these bonds have been made at 94.

The average of sales of what may be termed country securities range from 85 to 90, without deducting commissions, etc. The present is a remarkably favorable time for their negotiation, as good probably as will be seen for many years to come.

New York.

The Hudson River Railroad Company have purchased, at a cost of $20,000, a site for a depot opposite Albany, generally known as Gibbon's Dock.

Mr. Whitney's Railroad.

An editorial notice of the article upon Whitney's railroad, by "*a Western Man,*" is crowded out of this week's paper.

Improved Railroad Frog.

The ordinary frog on a railroad is one of the most constant sources of expense and trouble in the maintenance of *way*, and some of the great causes of accidents to the machinery passing over it. Wherever they occur, a violent concussion is produced, which very soon knocks off the point, and which must be replaced by a new one. Every concussion has a tendency to weaken the strength of iron; a given number being adequate to destroy its texture altogether. Every time, therefore, that a wheel or axle receives a violent blow, it becomes less able to bear the burden previously imposed upon it. In passing the frog now in common use, in addition to these evils, the flange of the wheel takes which load, and a violent strain on the axle, and wheel is produced, which eventually shows itself in the breaking of one or the other, or both.—Accidents often occur, which can be traced to no immediate cause, this being spread out over a long period, and only showing itself when it has been a long time in operation.

To remedy these evils a very simple contrivance has been invented, which may be readily understood by reference to the cut annexed to the advertisement on another page. It is made by drawing out the ends of the rails, and bringing them up to the side of the frog; the extreme points of these being turned back, so as to allow the flange of the wheel to enter between them and the frog, and to shove them back, when the trains pass along. The rails being moveable the ends opposite the frog being held simply by a pin which allows lateral movement. The rails are kept in place by a spring, either of steel or India-rubber, or by a weight. They are prevented from spreading too far by a pin cast into the bed piece.

The improvement completely protects the point of the frog, which is made to last as long as the rail. It secures a continuous bearing, so with its use it is impossible to tell, from any change in the motion of the train, when the frog is passed.—These great desideratum it completely secures. It is extremely simple, and has been in use nearly a year and a half on the Pennsylvania railroad, and works admirably in all weather, and under all circumstances, and has received the universal commendation of all who have witnessed its operation.

It has recently been placed on the New Jersey roads, where we have had good opportunities of seeing it tested. It is as cheap in the outset as the old frog, and we feel fully convinced that it is one

of the most valuable improvements of the day, and should be in use upon every road in the country.

AMERICAN RAILROAD JOURNAL.

Saturday, January 4, 1851.

Improved Railroad Frog.

THE Patentee of the Improved Frog now offers to Railroad Companies the use of his patent Frogs. It is now proved after eighteen months' trial to be the only perfect crossing plate in use—its operation entirely imperceptible to passengers in the cars, thereby proving the ease which it affords to the machinery—receiving no jolt, and imparting none. Its original cost is less than the steel plated clab frog, now generally used, and having the point of the V, or angle of crossing, substantially protected with a wrought iron running surface, its wear under all circumstances is as durable as the rail itself. Engineers and Superintendents of Railroads are referred to the following certificates. The Patentee is willing to repair to any railroad, and superintend the making and putting down of one or two of these Frogs as required. For further information apply to HENRY A. LANDRY, No. 3 North Front st., Philadelphia, or to S. B. Higgins, Postoffice, N. Y.

—

Wilmington, June 15th, 1850.

Mr. Henry A. Landry has contrived an apparatus for Frogs of a self-acting nature, which I feel great confidence will prove useful. We have laid it down on our road, and so far it answers every expectation. I would recommend its use on all important roads.

J. R. TRIMBLE.
General Sup't Philad., Wilm. & Balt. Railroad.

—

Philadelphia, Jan. 24th, 1850.

I have examined the Patent Safety Frog of Henry A. Landry, laid down on the Philad. and Columbia railway in September last, and now in use about four months. Its operation is simple and effective, and no perceptible wear or derangement can be discovered in the daily (if not hourly) use to which it has been subjected. I consider it a decided improvement upon the Frog Casting heretofore used, and believing that the saving in wear and tear of machinery upon a railway, will soon pay for the increased cost of the Safety Frog. I take pleasure in recommending it to the favorable notice of Engineers and Superintendents of railroads generally. EDWARD F. GAY,
Civil Engineer.

—

Office of the Philad., Germantown and Norristown Railroad Co., Philad., June 15th, 1850.

Mr. Henry A. Landry,

The Improved Railroad Frog put down by you upon our road some five weeks since, has thus far operated to our entire satisfaction. The cars pass over the same without the least shock or jar. It is my intention to continue their use upon the road, being pursuaded their introduction generally will prove highly advantageous. Yours, etc.

WM. E. MORRIS, President.

—

Superintendent's Office, Philad. & Columbia R R. Parkersburg, Chester Co., June 6th, 1850.

To whom it may concern,

Mr. Henry A. Landry having put into use on the Philad. and Columbia Railroad at this place, his patent self-acting Frog, and the same having been in practical operation for nearly nine months, I take pleasure in stating that it seems to answer all the purposes for which it is designed, viz: to give an even running surface to the *tread* of the wheel, thus obviating the concussion incident to the Cast Iron Frog, and the necessity of running on the *flange* of the wheel in crossing such frogs. WM. ENGLISH,
Sup't Philad. & Columbia Railway.

—

Office of the N. Jersey R.R. & Transp. Co., November 7th, 1850.

The Directors of the N. J. R. R. & Transp. Co., on the recommendation of the Superintendent and other officers of the company, after a sufficient trial of the Improved Patent Frog, have purchased from Henry A. Landry the right to make and use the said patent Frogs on their roads, and can recommend them to all other railroads. J. P. JACKSON,
Vice President & Sup't N J. R.R. & Transp. Co.

To Iron Masters.

WANTED—A Person to take charge of a Blast Furnace for Smeling Iron, for further information apply to COLLINS, VOSE & CO.,
74 South street.

To Contractors.

BOYDTON & PETERSBURG PLANK ROAD OFFICE, Petersburg, Va., January 1st, 1851.

PROPOSALS will be received for the grading and planking of the Boydton and Petersburg Plank Road.

The road will be about 77 miles in length. Communications can be addressed either to myself at Sturgeonsville P. O., Brunswick County, Va., or to Mr. C. O. Sanford, the Engineer of the Company, residing in Petersburg.

The proposals will be considered at Ebenezer Academy, in Brunswick, on the 28th inst., at Jones' Tavern, in Mecklenburg, on the 30th inst., and in the city of Petersburg on the 4th of February next.

RICHARD W. FIELD, President.

The Baltimore American, Railroad Journal, N. York, Philadelphia Ledger, the Lynchburg Virginian will please copy one month.

1851.

Every person feels that the commencement of each new year is the appropriate season of retrospect. At such a time he is involuntarily forced to a reviewal of his condition and progress in life during the period that has just elapsed, and, as a necessary consequence, of the prospects for the future.

The Journalist looks upon the year in its relation to society, and passes its events in order before him, for the purpose of determining its proper position among those which make up the great cycle of the past. At the close of those longer periods, made by the lapse of a century, or a half century, he seizes the occasion to take a broader and more general view of the period that has just closed.—In looking at the *year*, he sees *phenomena* only.—In looking back over a half century, he is able to discover their *law*. In the *year*, we place an importance upon events, somewhat in proportion to their *apparent* magnitude. In the retrospect of 50 years, the real only remains, the accidental has disappeared; and, removed from the excitement which attended them, we then can see the law by which they appeared and passed away. The knowledge which we thus gain of the past, we are enabled to apply to some extent to the future, and measure passing events with a greater degree of accuracy than before.

At the commencement of every preceding half century, the *present* may be said to have been but a copy of the *past*, differing only in the change resulting from the slow progress of society in the same direction. The difference has been only in *degree*. The same instruments and agencies were used, with a little higher degree of perfection.—The same ideas, laws and customs, prevailed, meliorated and softened, from age to age, by the gradual, but slow, progress of the race.

How is it with 1851? Is the next half century to be a copy simply of all that have preceeded it, differing only in degree, and not in kind, or is it to possess features peculiar to itself, the result of new agencies and principles now in operation?

Up to the commencement of the present century, the great reason for the general uniformity to which we have adverted, was the fact, that the forces or powers which mankind made use of in the economy of life, were the same, viz: the muscular power of man and animals. The two great natural agents which had been made use of, water and air, depend in their use upon laws beyond our control. We must accommodate ourselves to them, or we cannot avail ourselves of their aid. But with *steam power*, the case is entirely different. Here man has a power vastly greater than that of the air or water. This power is entirely under his control. He presides at its birth. It carries to him whreever he will, with a speed exceeding that of the swiftest bird. In its uses, it not only includes all other powers, but vastly more. Here, then, is a new power at work; and the results of the future must correspond with the magnitude of this new element. We have seen something of its influence within the past 20 years, during which time more progress has been made in the arts of life than during centuries of earlier date. But we have yet only taken the first step; we are but in the infancy of this great new movement.

Mankind has thus far lived the sport of natural laws, and has regarded with fear and awe their manifestations. The earthquake and the lightning struck terror into his soul; the former, as the consequences of impious crimes, and the other as the expression of an offended Deity. Man has now turned upon the pursuer. He has seized upon the very principles which struck him with such fear, and made them the most subservient ministers for his good. The former gives him the power of moving at the highest speed consistent with safety, the other gives him the faculty almost of omnipresence. Encouraged by these he is pressing forward to new discoveries, and his mission for the coming age seems to be to unfold the modes by which all natural laws may become the instruments of his good.

ENLARGEMENT.

The present number commences the *nineteenth year* rnd the *twenty-fourth volume* of the AMERICAN RAILROAD JOURNAL; and with it we add 8 pages to its former size. This addition is made necessary by the increased amount of railroad matter which crowds in upon us, from the rapidly increasing number of these works; and is justified, we are happy to say, by the increased patronage with which we have been favored.

Our increased space we shall devote to the publication of the doings of railroad companies—to the new enterprises, either in progress or projected—and to the diffusion of such information as may be useful to those engaged in their prosecution. We shall in future give a carefully prepared monetary article, giving the current prices of railroad securities—a matter in which all companies, however remote they may be from the commercial centres, are deeply interested; as almost every company is obliged to resort to loans to carry out their works. We shall not only give our opinion as to the true *value* of securities, but we shall in all cases endeavor to give their *prices*, whether disposed of at public or private sale. Most of the eastern securities are represented in our cities by parties interested in them, or in the works upon which they are based. It is an easy matter cherefore to convince our capitalists of their value. But the case is different with western securities. These are as good as far as safety is concerned, as those made in Massachusetts or New York. If a particular credit sells high, this is an important fact toward creating a confidence in them. If sold far below their value the publication of this will be sure to turn public attention as to its cause; and this inquiry cannot fail to do good, as it will show in nine cases in ten that they were sold much too low.

What western securities need, is that public attention should be called to them. As soon as this can be done they will reach that relative position to which their real value entitles them.

With our increased size we hope to add materially to the usefulness of our paper. We also hope to receive equal encourgement in an increased amount of patronage.

Railroads in 1851.

As railroads are the product of the present age, and the great fact of modern times, the close of the first half of the present century suggests itself as a proper time to take a brief review of their first introduction, their progress, and the extent to which their construction has been carried. In doing this, our space will not allow us to go beyond the limits of statistical information, though this is by far the least interesting part of their history.

England, as might be expected, from her superior wealth and experience, preceded us a few years in the construction of railroads; and as our works were not commenced until experiments there had enabled that country to obtain some degree of perfection, and had given to these enterprises the same general features which now distinguish them at the present day, a brief notice of the first steps in relation to this great movement in England, will enable us better to understand and trace their progress in the United States.

The idea of a railroad was taken from the rude tram roads, (which consisted chiefly of longitudinal wooden sleepers,) and were used to convey coal from the pit's mouths to the place of shipment.—The saving effected by these over the ordinary road led to their more extensive use. To protect the wood, these were sometimes covered with flat pieces or bars of iron; these were for a long time confined to the transportation of coal, and were used only in the neighborhood of New Castle, and were exclusively worked by horses.

The first iron railway ever laid down, to the extent of twenty-five miles, was the Stockton and Darlington line, which was opened on the 27th of September, 1825. It was worked by locomotives, stationary engines, and horses. Owing to the inefficient condition of the locomotive power, the company had all but determined to abandon steam in favor of horses, when the superintendent of the road, Timothy Hackworth, offered to construct an engine adapted to the business of the line; this offer was accepted, and the engine built, the boiler of which was a plain cylinder, 13 feet in length, and 4 feet 4 inches in diameter. The heating surface was obtained from a double tube of malleable iron, in the form of the letter U, traversing the whole length of the boiler. One side of this tube was made available for the fire grate; and the heated vapor being passed through it, was returned by the opposite one to the chimney, which was actually a vertical continuation of this end. With this contrivance the engine had a heating surface double that of any other engine of its time. She was carried on six 4-feet wheels, four of them being spring mounted, and was the earliest of the six-wheel coupled class. The cylinders, 11 inches diameter, and 20 inches stroke, were placed vertically at what is now the smoke box end of the engine, and worked directly upon the first pair of wheels. At the same end was attached a malleable iron cistern, into which the water passed from the tank, previous to being introduced into the boiler, the driver having the power of regulating the supply; and a pipe from the steam exhaust was led into the cistern, for the purpose of admitting steam at pleasure, to heat the water. Another pipe was provided for the purpose of leading off a steam jet from the exhaust pipe at the chimney end, for discharge beneath the grate, the intention being to facilitate combustion.

In addition to its being the original of a class of engines now so universal, this engine was the first which had a blast pipe fitted to it, the whole of the exhaust steam—exceptiag only such a portion as was required for the purposes before alluded to—being conveyed into the centre of the chimney, and there thrown out in a jet from a conical pipe. She commenced working in October, 1827.

The cost of this engine was £425; number of tons conveyed by her in one year [1828] 22,442 tons over twenty miles; cost of conveyance, ¼d per ton per mile, or, including all repairs and maintenance, showing a difference of £532 in favor of this engine, over animal power.

These results at once decided the point against the use of horses, which up to that time were regarded as cheapest. This engine was the first ever constructed that proved the decided superiority of steam over animal power as a motive force, and may properly be regarded as the germ of, though in appearance it bore but slight resemblance to the highly finished machines now in use; the results of the use of this engine, proving its superiority over animal power, were by no means regarded as superior to all other contrivances for moving railroad trains. It narrowed the question however to the only two modes left; locomotive and stationary power being the only systems available for use.

In the early part of the year 1829, the Liverpool and Manchester railroad approached its completion, and the directors feeling themselves called upon to determine the kind of power they would make use of, appointed two engineers, Mr. Rastrick and Mr. Walker, to visit the Stockton and Darlington railroad, and report to them the most suitable power to be used. These men, after making a full investigation of the matter, reported in favor of *stationary engines*. This report, as is well known, was unsatisfactory to the the company, and they came to the conclusion to offer a premium of £500 for the construction of an engine that would fulfil certain conditions. Four engines were entered for the prize, the "Novelty," by Braithwaite & Ericsson; the "Rocket," by George Stevenson, the "Sanspareil," by Timothy Hackworth, and the "Perseverance," by Mr. Burstall. The results were highly satisfactory, and were far superior to anything that had yet been realized; the company at once determined in favor of locomotive engines, and from that period they were universally used except upon inclined planes. From that time the whole problem of the efficiency and usefulness of railroads was considered as settled, and their subsequent construction has gone forward in every civilized country as fast as means could be obtained, or as people could be made to realize their great value. England at once embarked in their construction with great zeal and energy, and she now presents the greatest extent of line of any country in the world, and by far the most splendid and magnificent public works in connection with them.

The first railroads constructed in the United States were the Quincy railroad in Massachusetts, designed for the transportation of granite, and the Mauch Chunk railroad in Pennsylvania, a coal road. Both of these were openad in 1827, and they bore pretty much the same relation to the railroad system of this country as did the tram roads of which we have spoken, to the English railroads.—The first roads of any considerable magnitude opened in this country was the Baltimore and Ohio, which was chartered in 1827, commenced July 4th, 1828, and opened for a short distance in 1830. In December, 1831, it was opened for a distance of 60 miles; and the only roads in addition to the above in operation on the first day of January, 1832, were the Charleston and Hamburg railroad, (as it was then called) for a distance of twenty miles, the Albany and Schenectady for a distance of 12 miles, making the whole extent in use 18 years ago 107 miles. To show the whole extent of line in operation, in progress, and in project on the first day of January, 1832, we copy the following from the Railroad Journal bearing date January 2, 1832:—

Baltimore and Ohio—whole length 250 miles—60 miles completed and in use

Albany and Schenectady—16 miles in length—12 miles in use.

Charleston and Hamburg—135 miles in length—about 20 miles completed, upon which the U. S. mail is carried.

Mauch Chunk, completed and in use, 9 miles.

Quincy, near Boston, now in use, 6 miles.

Ithaca and Oswego, 29 miles.

Lexington and Ohio, 75 miles.

Camden and Amboy, 50 miles.

Lackawanna, 16 miles.

LINES IN PROGRESS.

Massachusetts, from Boston to Hudson river	200
Ithaca to Catskill	167
Boston to Brattleboro	114
Columbia, from Philadelphia to Little York	96
Baltimore and Susquehanna	48
Boston and Providence	43
Frankston and Johnston on the Alleghany	40
Baltimore and Washington City	38
Hudson and Berkshire	25
Frenchtown and Newcastle	16
Harlem	6
Richmond and Chesterfield	12
New Orleans	6

York and Maryland, distance not known.

Tuscumbia, "

Philadelphia and Norristown "

" and Chester, "

" and Delaware, "

Elizabethtown and Somerville railroad in New Jersey.

These projects were followed by a very large number in every part of the country; the success of the few first attempts, at once aroused the attention of the whole people to their importance, and a great number of lines were commenced, some of which are still unfinished, and many of them abandoned, after the expenditure large sums of money. Without having space at this time to present a detailed account of the progress of the several roads, we have prepared the following table, showing the extent to which these had been multiplied from the first commencement up to the year 1840, with the date of their openings; these are compiled from sources which were regarded as fully reliable at that time. It will be seen, however, that many lines which were then stated to be in operation have since been abandoned.

RAILROADS COMPLETED AND IN PROGRESS IN THE STATE OF PENNSYLVANIA.

Name of railroad.	Opened.	Miles.	Total length of road.
Philadelphia & Colum.	1834	82	82
Alleghany Portage	1834	36¼	36¼
West Chester	1834	9	9
Valley			20¼
Phild'a., Germantown and Norristown	1837	20¼	20¼
Philadelphia & Reading	1839	54½	102
Philadelphia & Trenton	1833	30	30
Philad. & Wilmington		28	28
Harrisburgh & Lancaster	1837	36	36
Cumberland Valley		46	46
Franklin	1839	10½	24
York and Wrightsville			13
Mauch Chunck	1827	9	9
Room Run	1833	5	5
Beaver Meadow	1836	26	26
Hazleton Branch	1838	10	10
Sugar Loaf Summit	1839	2	4
Buck Mountain to Lehigh			4¼
Susquehanna & Lehigh			20¼

Little Schuylkill	1831	23	29
Little Schuyl. and Sus.			39
Beaver Meadow Extension.			12
Schuylkill Valley	1830	10	10
Mill Creek	1830	5	5
Branches to both		12	12
Mount Carbon	1831	7	7
West Branch	1831	18	18
Pottsville and Danville	1838	29½	42½
Williamsport & Elmira	1839	25	67
Blossburgh & Corning			25½
Carbondale	1829	16½	16½
Pine Grove	1830	4	4
Lykens Valley	1830	16½	16½
Bear Creek to Coal Mines			4
West Philadelphia to river Schuylkill			10
Philadelphia		6	6

RAILROADS COMPLETED AND IN PROGRESS IN VIRGINIA, NORTH AND SOUTH CAROLINA, GEORGIA AND FLORIDA.

Name of railroad.	Opened.	Miles.	Total length of road.
Richmond, Fredericksburg, and Potomac	1837	61½	75½
Richmond and Petersburg	1838	22½	22½
Louisa	1838	35	49
Richmond and Coal Mines.		12	12
Chesterfield	1831	13	13
Petersburg and Roanoke	1833	60	60
City Point	1838	9	9
Greensville and Roanoke	1838	17½	17½
Portsmouth and Roanoke	1837	78½	78½
Winchester and Potomac	1836	32	32
Experimental	1833	1½	1½
Raleigh and Gaston	1840	84½†	84½
Wilmington and Raleigh	1840	161†	161
Charleston and Hamburg	1833	136	136
Louisville, Cincinnati, and Charleston			66
Georgia	1839	87½	211½
Central	1840	100†	193
Monroe	1839	24	96
Western and Atlantic			140
Tallahasse	1837	23	24
St. Joseph & Lake Wimico.	1836	8	8
St. Joseph and Iola,	1839	28	28
Alabama, Florida, and Ga.			56½
Total		994	1675½

† These distances stated as opened was completed in 1840.

RAILROADS COMPLETED AND IN PROGRESS IN THE EASTERN STATES.

Name of railroad.	Opened.	Miles.	Total length of road.
Bangor and Orono	1836	10	10
Nashua and Lowell	1838	14½	14½
Boston and Lowell	1835	26	26
Charlestown Branch	1839	1½	1½
Boston and Portland	1839	34½	34½
Quincy	1827	4	4
Eastern (in Mass.)	1839	25	37½
Eastern (in N. H.)			15
Marblehead Branch	1839	3	3
Boston and Worcester	1835	44½	44½
Milbury Branch		3½	3½
Western	1839	54½	117
Boston and Providence	1835	42	42
Dedham Branch		3	3
Taunton Branch	1836	11	11
N. Bedford and Taunton			20
N. Y. Prov. and Boston	1837	47½	47½
Norwich and Worcester	1839	59	59
Hartford and N. Haven	1838	18	38
Housatonic	1839	35	73
		436	604

RAILROADS COMPLETED AND IN PROGRESS IN ALABAMA, LOUISIANA, MISSISSIPPI, TENNESSEE, AND KENTUCKY.

Name of railroad.	Opened.	Miles.	Total length of road.
Montgomery & West Point.			85
Wetumpka and Coosa			56
Selma and Tennessee			170
Cahawha and Marion			27
Linden and Demopolis			22
Mobile and Cedar Point	1837	5	26½
Tuscumbia, Courtland, and Decatur		46	46
Pontchartrain	1831	4½	4½
N. Orleans and Nashville	1839	22½	88½
Bath	1837	1½	6
Carrolton	1837	7½	7½
Orleans Street		1½	1½
Lake Borgne	1838	5	25
Alexandria and Cheneville	1839	6	30
Baton Rouge and Clinton			30
Clinton and Port Hudson	1839	14	28
West Feliciana *			28
Mississippi	1839	25	140
Vicksburg and Jackson	1839	25	45
Jackson and Brandon			12
Raymond			6
Grand Gulf and Pt. Gibson.			7½
Hiwasse			97
Lagrange and Memphis			50
Somerville Branch			13½
Lexington and Ohio	1835	30½	94½
Portage	1837	1½	1½
		195	1148½

* 7 1-2 miles of this railroad are in the State of Mississippi.

RAILROADS COMPLETED AND IN PROGRESS IN THE STATES OF OHIO, INDIANA, MICHIGAN, AND ILLINOIS.

Name of railroad.	Opened.	Miles.	Total length of road.
Mad River and Lake Erie	1838	15	130
Little Miami			85
Monroeville and Sandusky	1838	15	15
Cleveland & Newburg city	1838	6	6
Fairport and Painsville	1838	3	3
Ohio			177
Madison and Indianapolis	1839	20	90
Buffalo and Mississippi			156
Erie and Kalamazoo *	1836	33	33
Palmyra and Jacksonburg	1838	11	46
River Raisin and Lake Erie	1838	4	4
Detroit and Pontiac	1839	18	25
Shelby and Detroit	1839	10	17
Ypsilanti and Tecumseh			24
Detroit and Maumee			3
Central †	1839	38	196
Southern †			189
Northern †			101½
Central			450
Northern Cross	1839	16	230
Peoria and Warsaw			116
Bloomington and Mackinaw			36½
Southern Cross			147
Alton and Shawneetown			145
Alton and Shelbyville			108
Central Branch			71½
Rushville and Erie			10
New Pittsburg and Miss	1838	7	7
Galena and Chicago Union‡			100
		196	2821½

RAILROADS COMPLETED OR IN PROGRESS IN NEW JERSEY, DELAWARE, AND MARYLAND.

Name of railroad.	Opened.	Miles.	Total length of road.
New Jersey	1836	34	34
Paterson and Hudson	1834	14	14
Morris and Essex	1837	23	23
Elizabeth and Somerville	1840	22	26
Camden and Amboy	1835	61	61
Camden and Amboy Branch	1839	31	30
Camden and Woodbury	1833	7	7
Newcastle and Frenchtown.	1832	16	16
Wilmington and Susq.	1837	34	34
Baltimore and Port Deposit.	1837	36	36
Baltimore and Ohio	1834	85	435
Washington Branch	1835	30½	30½
Baltimore and Susq	1838	58	58
Westminster Branch	1832	10	18
Baltimore and Annapolis	1840	19½	19½
Eastern shore			118
		480½	961½

Name of State.	No. of railroads.	No. of miles in operation.	Total length of railroads.
Maine	1	10	10
New Hamp.	1	14½	29½
Mass.	14	270½	365½
R. Island	1	47½	47½
Connecticut.	3	94	152
New York	28	453½	1317½
Pennsyl'nia.	38	576½	850½
New Jersey.	7	192	196
Delaware	1	16	16
Maryland	8	273½	749½
Virginia	10	341	369
N. Carolina.	3	247	247
S. Carolina.	2	136	202
Georgia	4	211½	640½
Florida	4	58½	217
Alabama.	7	51	432½
Louisiana.	10	62	248½
Mississippi.	5	50	210½
Tennessee	3	0	160½
Kentucky	2	32	96
Ohio	6	39	416
Indiana	2	20	246
Michigan	10	114	738½
Illinois	11	23	1421
Total,	181	3332½	9378½

To be continued.

S. M. FELTON, Esq., has accepted the appointment of President of the Philadelphia Wilmington and Baltimore Railroad, with a salary of $5,000 per annum, and resigned the charge of the Fitchburgh Railroad. L. Tilton, Esq., present Superintendant of the Cheshire, succeeds Mr. Felton on the Fitchburgh.

Railroad Iron for Sale.

THE Mansfield and Sandusky City Railroad Co. have on hand from twelve to fifteen hundred tons of American Flat Bar Railroad Iron, weighing 38 lbs. to the lineal yard, which they offer for sale at reasonable rates.

The iron has been in use about four years, and is sound and in good condition. It is 2½ by ½.

It will be ready for delivery at short intervals between the opening of navigation in the spring and the 1st September next.

For further particulars inquire at the office of the company at Sandusky City, Ohio.

C. G. FORBES, President.

December 24, 1850.

Railroad to the Pacific.

Sir—I have read in your Journal of Dec. 14, the communication on the subject of a railroad to the Pacific by a "Subscriber" dated at St. Louis, Dec. 1, 1850.

I should not notice his remarks, or ask you to give place in your valuable journal to what I shall write, had I not devoted much time, and with all the sources of information before me, to a thorough examination of the whole subject, as I think in all its bearings, and were it not obvious that your "Subscriber" does not understand the subject on which he writes, at least so far as relates to Mr. Whitney's particular plan, and although such may not be his object, he is nevertheless leading the public mind into a cloud of darkness which can have no result, or tendency even, but to defeat any and every plan for a railroad to the Pacific.

First, it is not a fact that Mr. Whitney, for himself nor his *many* friends for him, have ever claimed "a patent right to enrichment by it"—On the contrary, Mr. Whitney claims no "patent right" and has so declared all over the country. He has tendered his whole efforts of body and mind to his country for the accomplishment of this great work, and he has done so at his own expense and own risk; he claims nothing for it and has published to the world "that if he accomplishes the work the country may give him anything or nothing;" he asks only to be the instrument and he has further published to the world that,

"My plan has become the foundation for others to attempt to build upon; but all the supposed improvements, yes, and more too, have been examined by me, and discussed with others, long ago, and thought to be not feasible.

I have but one motive, or object, and that is, to see this great work successfully accomplished, which would be a sufficient reward for my labors; and if there can be found a better plan, or a man whom the nation may think better qualified, then I am ready to support that plan, or sustain that man with my efforts, and all the information which my seven years' labors have gathered together, and the reward will be sufficient in believing that I have been the instrument in bringing this great subject to the favorable consideration of my fellow-citizens.

ASA WHITNEY."

New York, May 1, 1849.

And is this claiming "a patent right to enrichment?"

But there has been no other plan submitted which on examination by Committees in Congress has been found to be feasible, or which could obtain its sanction. Your "Subscriber" admits this, and should this fact not be considered conclusive evidence in favor of Mr. Whitney's plan?

Mr. Whitney has devoted the very best part of his life to bringing this great subject before, and urging it upon, the consideration of the people. He commenced it alone and has brought it to its present position alone. He has submitted to the scoffs and sneers of the many *very* wise persons who are now seeking to find some mode to evade his plan, defraud him of his just deserts, and benefit themselves, always too on the very principles upon which his plan was founded in its origin.

Secondly, your subscriber does not deny that Mr. Whitney is "the father of the project." But the man who had the capacity of mind to originate the project, the industry and patience to mature it in all its details, the boldness and character to bring it before the world, and the perseverance and energy to withstand and overthrow the doubts and fears as well as the scoffs and ridicule of, I may say, the world,—the man who has examined in person a large distance of the country through which his great work will pass, has ascertained himself where the streams can all be bridged, and also ascertained where materials, timber, &c., can be had as well for the road as for the necessary wants for settlements, where they do not exist—the man who has visited all the most important commercial parts and places of the Globe to ascertain the position and condition of the people with their commercial capacities and statistics, who has arranged a geographical, political and commercial division of the Globe, which exhibits the position, condition and wants of the entire human family, connected with and upon which is based the conception of his great project, the grand object of which is to change the condition, as his arrangement shows the relative position, of the entire human family: but no, this is not the man to execute his own great designs!

Thirdly, if your "Subscriber" had read the bill reported by the Committees of each House of Congress, he might have saved himself much trouble, as he would there have seen that it is fully "explained in detail in regard to the sale of the lands." They are sold to Mr. Whitney by the Government, under such enactments and restrictions as will secure the payment of the sums stipulated, and also guarantee the construction of the road by him as an individual enterprise, he vending the lands to actual settlers who receive their titles directly from the Government and not from him, after he shall have completed sections of the road in advance—that is, as he shall complete sections of ten miles each, for 800 miles he is permitted to sell (not to take) one half of the land on the line of each section so completed say 5 miles by 60, from which his expenditures for the ten miles of road before completed would be reimbursed, but the other half would be reserved as a fund to meet his outlay after the first 800 miles and when the lands may be too poor for settlement. Thus the lands are sold to him by the Government and when after conforming to the conditions of the bill he will re-sell them to reimburse for his outlay. The ten miles of road to be constructed as the bill stipulates will cost $20,000 per mile or $200,000; the 5 miles by 60 of land which he can thus sell would be 192,000 acres, for which, as the lands are now being disposed of, the treasury would receive no benefit, and can now be purchased in soldiers bounties to the amount of millions of acres for 65 cents per acre, would amount to but $124,800. But Mr. Whitney takes upon himself the risk with his own efforts and means, in building the road in advance, to raise the value of this 192,000 acres from what it can now be purchased for, say $124,800, to his outlay of $200,000, and if he cannot enhance its value to beyond that sum then it is clear that he cannot gain anything by the enterprise. But he may gain something, and the plan may succeed, and stupendous results may be accomplished, worth hundreds of millions of dollars to our nation and of vast benefits to all manhind. Here seems to be the grand difficulty, not that the plan will not, but that it may succeed, and an individual, *a single individual*, who can never under any circumstances have but one vote in the affairs of the nation, and no more political power or influence than the humblest individual in all the land, devotes the best energies of body and mind at his own expense, offers to take upon himself the entire risk of success, asks not a dollar from the treasury, and promises to accomplish for the nation a work in its magnitude far before that of any other age, and in its results far beyond the power of human calculation to estimate.—But he may gain wealth or popularity by its succese. No, no, it will never do: it must not be said that there is no man in all the land wise enough to make a better plan, and if there is no such man, as Mr. Whitney has already given us the grand principle to work upon, we must divide it up into a stock-jobbing concern; decidedly better to not have the road than that Mr. Whitney should gain so much by it! But six years have rolled away since the plan was first presented to Congress and Mr. Whitney is stronger and stronger every day, because no plan has been found that can supersede his.

Fourthly, it is obvious that your "Subscriber" does not understand what he is writing about, for he talks of "the distribution of stock," &c.—Now it is a well known fact that Mr. Whitney's plan does not propose any stock and his road is not to earn any dividends. It is to be *a free road* for the commerce of all the world, with no charges except for the necessary expenses of operation and repairs, and here is no doubt another grand cause for objections, and the reason why "business men and railroad men have generally gone against it." Yes, and others may be added, stock jobbers and speculators, as there is to be no stock and no dividends it is not the field for them, but arrange it so as to put a hundred millions of stock into the market, with the lands, or the Government pledged for the interest and its redemption, and that would be the popular scheme in certain quarters. If Mr. Whitney would form his plan to this "course he might obtain what he has not now, the confidence and support of the railroad interests." But Mr. Whitney is not seeking to propitiate such interests particularly; it is other and far more important interests he is laboring for. His aim is to make a great highway for the laboring man, and means of cheap transport for the products of his labor to the markets of the world, and return as sure and ample reward for the labor—to give him a home and plenty, and elevate his condition.

Mr. Whitney's plan offers no inducement to the speculator, he seeks no subscribers to stock, and is not compelled to satisfy the capitalist that his subscription would be a profitable investment. His is to be the poor man's road to comfort and affluence—it will create its own means for its construction. and add so much capital to the nation as the work may cost, therefore, is no "withdrawal from other business," and here again your "Subscriber" does not understand Mr. Whitney's plan.

Fifthly, Your "Subscriber" is in error again, else he attempts to mislead the public mind, for it is a well known fact all over the country that *legislators* have gone for Mr. Whitney's "particular mode of accomplishing it," and their resolutions expressly so declare and in most cases condemning other plans. Their resolutions, which were adopted by a unanimity without a parallel in legislative bodies, are now in the possession of the committees to whom referred in each House of Congress, and have been published with their reports.

Sixthly, your "Subscriber" is again in error in supposing that "Mr. Whitney's scheme leaves the public too much in the dark." No subject has ever before been so generally and so strongly recommended to the speedy action of Congress, by Legislative bodies, by public meetings, and by the Press. I now have before me the leading and standard periodicals of the country, "Hunt's Merchants Magazine," the "Whig Review," "De Bow's Southern Review," and "the Democratic Review," all urging the adoption of Mr. Whitney's as the only feasible plan, and so with the Press almost universally. But there are sections of the country who "are in the dark to Mr. Whitney's scheme" because his proposed starting point does not suit their particular interests. There are St. Louis, Memphis and Illinois all desiring to control it and make all east tributary to them, and subject to transhipments and ferriage besides, which would defeat the great object of the work. But neither of them can have their way except from a direct appropriation from the treasury for a Government work, which the committees would not recommend, nor would Congress adopt it, and this again puts an end to the whole matter and brings it all back upon Mr. Whitney's as the only plan which can be sanctioned either by a committee or by Congress. St. Louis has had her convention, Memphis has also had hers, and Illinois has spoken out, and what is the result? Why they must each look to the Government—to the public treasury—a forlorn hope.—But what say the people of that great basin? The press of Tennessee say, that Mr. Whitney's is the only feasible and constitutional plan, and the people publicly assembled at Louisville, at Cincinnati, at Indianapolis, at Dayton, at Columbus, and at Zanesville, all say, "there is no plan but that of Mr. Whitney which is feasible or which they can sanction." And all this immediately following the two conventions at St. Louis and Memphis. Will your "Subscriber" say there

is a cloud over all these people? Your "Subscriber" writes from St. Louis, and may it not be that he may be looking from under a cloud? He says, "if the road should be commenced as proposed by Mr. Whitney the citizens of Missouri will claim the privilege of making a branch to it." And he may rest assured that nobody will deny to them what cannot be prevented. Mr. Whitney's will be a *free road* and all sections of the country can build branches to it, and as many as they may please and have the free use of it besides. If your "Subscriber" did not look from under a cloud he might have already seen that Baltimore, Philadelphia, New York, and Boston are pushing on as fast as possible to Galena with which they will each have a direct railroad communication within two years, and from Galena to the point where Mr. Whitney proposes to bridge the Missippi is about forty miles. And when your "Subscriber" comes out into the light, he may see that Baltimore even with a railroad as far as Galena on her direct route to the Pacific, would not be likely to go South and out of her way 300 miles, and besides pay transhipments and ferriage, expressly to accommodate St. Louis. No, St. Louis must do as all east will do, build to Mr. Whitney's road, and then receive her full share of its vast benefits. She ought not to expect or ask more.

And finally, your "Subscriber" admits that it is necessary to have a railroad built to the Pacific—that it must and will be done—that it is feasible and will pay, and proposes the lands as a basis for means, so much of, and for Mr. Whitney's plan, but the lands must be a security for a stock, which would not only secure the stockholder from loss but make for him a circulating medium on which he would no doubt receive interest besides dividends from the earnings of the road. This would be truly a magnificent scheme and a good foundation for a National Bank. The stock could be both capital and circulation, and if Congress will give him a Charter he will no doubt be ready for operations on a large scale!

A Western Man.

Maryland.

Baltimore and Ohio Railroad.—We copied not long since from the Baltimore Patriot a minute description of the above work from Cumberland and Savage River, we now continue this account of the line from that point to Wheeling.

At the Savage River the railroad has reached a distance of 30 miles from Cumberland, and an elevation of about 1000 feet above Baltimore tidewater. The Potomac valley (which has been availed of to this point,) is obviously thus far the route indicated by nature for this work—for the longest watercourse (where the direction serves) almost invariably affords the greatest facilities for penetrating a succession of mountain ridges. So also, in the Glade countr yabove it is apparent that the location of a railroad line is a matter of ready determination. The problem then is to cross the Alleghany Backbone ridge, and to connect the location of two lines over an intermediate space of 15 miles, opposing a difference of elevation of 1600 feet; and this by a grade of ascent and limit of curvature not beyond what the successful working of a railroad requires.

As far back as 1837, an instrumental survey of this section of the route had been made under the direction of Mr. Latrobe, then engineer of location and construction, and now chief engineer of the company. The grade then used was 66 feet per mile, but the line was very circuitous crooked and expensive. In 1843 further examinations of the ground were made by the same gentleman, and a direct line up the Savage and Crabtree vallevs recommended by him, upon which line, when instrumentally surveyed in 1847, a grade averaging 116 feet per mile for 11 miles, and about 100 feet per mile for 4 miles, was found to be necessary. By this line a saving of 10 miles of distance and a heavy amount of expense in construction was saved, in comparison of the route of 1837, and upon the fullest consideration, after an extensive system of additional surveys of various other lines with grades of 80 feet per mile, the engineers called into cousnltation with Mr. Latrobe concurred in recommending the line suggested by him and upon which the road is now being made.

It will be observed that in the years 1836, & '39 athorough set of surveys of routes crossing the Allegany mountains in the direction of Pitsburgh had been made, under Mr. Latrobe's direction, by the several parties of engineers commanded by Messrs. Swann, Hazlehurst, Morris, Steele and Lee, assistant engineers. These routes were ot necessity abandoned, for reasons which need not be detailed.

In leaving the Potomac, which it here crosses from Virgina into Maryland, the road is carried along a spur of the Great Backbone mountain, and in one half mile of light work is running parallel with the course of Savage river and at a level about 10 feet above its water. The road is here upon the North East flank of the spur of the mountain, just mentioned and ascends with an average of rise 2 1-5 feet in the 100, varying slightly according as the line lies, in curve or tangent—a grade practicable to locomotives at any season and under all contingencies, as has been fully tested upon the heavier grades of one of the railroads from the vicinity of Frostburgh to Cumberland. The graduation as far as Crabtree, with the exception of one tunnel aad a few small thorough cuts, is nills ide cutting, the excavated material making the embankment. The tunnel refered to is upon the 32nd section, through a secondry spur jutting out at right angles from the main spur.

This tunnel, though a short one the tunnel excavation but 300 feet and the cuts leading to it 400 more, is noticeable on account of its going through, the hill—the road upon a curve of 600 feet radius than which there are none more abrupt upon the line It is also an example of the frequent demand in the prosecution of work of this magnitude, upon all the resources of engineering knowledge. At the offset, the only insight the engineer has of what he is to encounter, is a geological surmise that his rock work is to be in the secondry sandstone, which immediately underlies the lower coal measures—for he has perceived indications of such a ledge for several miles below rising with a pitch about that of the grade. But the first cutting discloses the fact that this road enters the hill a little below the upper surface of this ledge, and that the body of the tunnel chamber is to run through an easily excavated stratum of indurated fire clay, surmounted by a vein of coal, and that again by a second ledge of apparently compact sandstone. The original dimensions of the tunnel were 24 feet width and 22 height to the crown; but with the prospect of a natural roof, at from 36 to 30 feet above the road, the height first designated is changed to correspond. The excavation continued, untowardly discloses the fact that his roof is not perfectly sound, seams running traversly across so as to threaten the security of the work. Upon very careful personal inspection of the place, he again changes his plans, directing the arching of the tunnel; and there being an excess of height, and as he desires to economise both excavation and masonry, he decides upon a parabolic section for the vaulting walls; and still unwilling not to avail himself, in some way, of the natural roof, hits upon the expedient of notching his two segments into the ledge above, converting the rock into one continuous key-stone. But uncertain as yet, as to whether the upper ledge runs on at the proper pitch, and with sufficient soundness to answer the proposed end, he orders an experiment drift (or gallery) to be at once pushed through the hill, to determine his final course. This is done but the result shows that the ledge rises beyond anticipation, and at the western end, has reached a height and is in a condition to present serious obstacles to keying into the rock. The whole plan is again changed; and the tunnel is to receive throughout a gothic arch of rubble masonry, starting from a bench of solid rock, seven feet above grade. Such is the present design;—and this tunnel, with its responsibilities, is but one of several on the line. Notwithstanding the variety of delays alluded to, the work is being pushed on by a day and night force, under the supervision of Mr. S. T. Shipley, resident engineer, at a rate to insure its being prepared by spring for the passage of cars.

A few hundred yards above the tunnel, the road will probably receive a track from the valuable coal lands on the opposite side of Savage owned by the George's Creek Mining Company. This track is to run down the mountain side, and crossing the river ascend again to the Baltimore and Ohio railroad, a reconnoissance having determined that both the ascent and descent may be accomplished in three miles with a 200 feet grade. A particular mention is made of this case to show with what facility, in spite of tha roughness of the country, connetions may be made, with almost any point, with the main trunk.—This track together with the locomotive track projected by the same company from their works at Lonaconing, eight miles up George's Creek to intersect the Baltimore and Ohio railroad at Westernpoint, is in charge of Mr Wm. H. Smith, engineer and superintendant of the company, and an *eleve* of the Baltimore and Ohio engineer corps.

From the tunnel onwards, the lines of stratification rise faster than the road grade, throwing out two miles on, a rock formation, styled by the workmen "bastard limestone"—probably an imperfect limestone, still of the secondary series, though low down. In the whole of the hill-side excavation, there is exposed to the geological examination a profile of one of the most interesting mineral regions on the continent. And considering the extent of country traversed from Baltimore to Wheeling, and the different formations touched upon—from the primary on the Patapsco and the secondry in the mountains, to the alluvial deposits beyond, a scientific exploration along the road would be an analysis of the geology of the region.

A few hundred yards on the road reaches the junction of Crabtree Creek with the Savage River and here about 175 feet above the river—the road having gained in five miles more than 100 feet over the rise of the bed of the stream. The scenery in this vicinity growing wilder as the road penetrates the fastnesses of mountains, has at this point reached the acme of picturesque beauty which transcends the power of pencil and canvass to convey to the eye a realizing impression of what is elsewhere. It would defy the combined excellence of Rosa and Gaspard Poussin—the one in his "savage wildness," the other with his exquisite arrangement of landscape details—to portray, after months labor in artificial composition the view which here greets an instant's *coup dœil.* Enclosed itself by its mountain walls, the Savage valley diverges into three prongs—recesses they seem, until retreating back the indentations merge themselves imperceptibly into the mountain mass behind—to the Northward, still the Savage winding its lonely way down from above Frostburgh; then a little west, the valley of Munroe's Run, and then due west, and much the most distinctly marked, that of Crabtree. Climbing now, [and a tug it is,] the point of the Great Savage mountain, which comes down from the north-eastward—ascending this to a height not less than 1000 feet above the stream, you may meet a long barrier of rock itself 50 feet high perpendicularly; and clambering up this again, you are rewarded with a view of surpassing splendor. Looking over to south east, as your eye peers above the ledge, you have glimpses of the Potomac gorge as far down as New Creek, bounded in the distance by the serrated line of Knobly; fairly on the rock and turning to the south, the vision returns to the retina a sea of mountains upon mountains, undulating like billows and like them still distinguishable from one another in nothing but the greater or less depth of their cerulean tints as the approach or fade away into the azure of the horzon. To the westward you recognize in the Great Backbone the continuation of the mountain in which you stand; then to the right of the Crabtree valley on to the summit gap through which the railroad passes, and still further the Glade hills. Lastly, to the north and west, across Crabtree and Savage, there are the knobs of the little Backbone, and beyond, the dark relief of the tall Meadow Mountain. The first of

these ranges reunites with the Great Savage a few miles over the Pennsylvania line, where the main chain continues its north-easterly course though at a less altitude. The highest point of the Maryland Alleganies may be assumed at least from 3200 to 3300 feet above the sea; for the railroad levels have been carried up to a point at the Ryan's Glade Summit 3098 feet, and from this point there are in sight knobs 150 to 200 feet higher.

The axis of direction of the Backbone crosses Savage River [which, by the by is a river rather by courtesy than fact,] at the mouth of Crabtree; and this line would seem tc be the western limit of the coal basin, for few if any traces of coal are detected beyond. Here also if our geologists are not at fault, the Savage River, (in ages past, no doubt, when the "oldest inhabitant" existed not to gainsay the fact) broke through the mountain barrier.—Whatever be the foundation of this bold hypothesis there are indisputable marks of the violent action of the water all along the mountains sides: huge masses of sandstone rock torn up and strewn around in strange confusion, boulders which seem to have been brought from a distance and here deposited, and other signs which carry the conviction that something has occurred sometime much out of the ordinary run of occurences. Tne Crabtree country is still in a primitive state. Some half a dozen families in twice that number of miles have had the hardihood to make a few small southside clearings; but the general aspect of the country is still that of the days of backwoods-men and their Indian predecessors.—Deer turkeys and pheasants, "use" in the more unfrequented parts; and it is but a few years past, that panthers and wolves have ceased to run. When the completion of the road makes the region of easy access, your Baltimore sporting gentry will know of few choicer resorts for the indulgence of their gun-powder propensities than their Alleghany hunting boxes, Back River and Maxwell's Point not excepted—Although the country may be valueless for coal the hillsides have fine growth for timber—pine, maple, cherry, chesnut and the usual mountain oaks; of the last, the chesnut oak in such quantitiy as to afford unu sual facilities for tanning mills. The owner of a large tract of these lands wasrecently on theground preparing for a saw-mill and tram track; and the lands generally in the same locality, it is thought are of sufficient value, to justify simliar improvements.

Along the Crabtree sections, the character of the work changes. The hillside cutting gives place to an alternation of thorough cuts through short spurs of the mountain and embankments in the hollows between. On the 38th Section, there is a very heavy cut, where a tunnel was originally contemplated, but which from the nature of the rock and considerations of economy, has since been abandoned. The cut is 600 feet in length, 108 at the greatest perpendicular depth, and 147 at the slope—which is believed to exceed any cutting in the United States, and also, the maximum cut which one set of levels [barometric perhaps,] has assigned for the Nicaragua ship canal. About two miles on, the road leaving the Great Backbone crosses Crabtree on to what is known as Little Backbone, but which is actually the main or dividing ridge. A bridge was first intended for this point, but there has been substituted as preferable, a heavy rock embankment [67 feet the greatest fill] throug the interstices of which the stream makes ts way without at all displacing the embankment material. Crabtree, when full, is the beau ideal of a noisy little mountain torrent—tumbling down through a "darksome dell" with an average fall of about 150 feet to the mile. From where the railroad first crosse up its source, the creek is treated as a triffling obstacle, and is passed and repassed, as either bank presents the better ground. The bridges at these crossings are to be iron, resting upon substantial stone abutments, whose wing walls are parallel with the line; or flaring according to their relative positions with reference to the stream. Of these bridges, seven in number, the largest is upon the 40th section, it is 23 feet in height, and 25 feet span, and crossed upon a skew of 45°. The material as in all the rest, is sandstone, laid in range work and in large blocks; the wing walls at the ends are stepped up in offsets.

Five miles further, the road finally reaches the summit which divides the Atlantic waters from those of the Mississippi valley; and at a height a little over 2600 feet above the sea, and through a cut 31 feet at the greatest depth, passes on into the Glades. A view is of course expected here, and at the proper point, a hill to the north of the summit cut, tne expectation is not belied. The view is westward down the glade, bordering on the little Youghiogney, over a country, rolling gently up from the stream [here a mere run] on one side to the ridge dividing off the adjoining glade, and on the other to the Backbone slopes—the glade meandering along with the stream until both are lost in the distance. The writer of this first saw the glade green in its early spring verdure, and radient in the last beams of one of our glorious sunsets; a few rounded hillocks on the glade margin, a few trees, gracefully grouped in groves, clumps of shrubbery around the deer licks, herds of cattle, grazing upon the rich pasture, and other like obects, all call to mind the idea of a highly favored agricultural district; but the total absence of every thing indicating habitation—not a house not even a shed—dispelled the idea as soon as conceived. Another occasion was on an August night, some two hours after midnight and by moonlight when on riding along the road which leads for a short distance on the high ground over the glade, the party saw the glade submerged as it were by a dense vollume of mist, which at this season usually settles down after night fall, upon the wet lands in the centre. As strange and beautiful as this view was to one sense, there was no want to another of a convincing proof that this appearance was no mirage, from the moisture, which as one rode down into the mist, struck through an ordinary garment like rain. The body of the Maryland glade lands lie to the northward of this, the Yough Glade, chiefly along the streams which run into the Youghiogheny;—and it is from the excellent pasture farms distributed through them, that you have your noted glade butter,—but even among these the farm buildings, with hardly an exception, are log cabins, and they, are few and far between. The glades, as you are well aware, are the abode oj health. The purity and invigorating properties of the atmosphere have not been too highly extolled. A hearty constitution, with the ever present temptation to active excercise, presented in the game, especially the fine pheasant shooting, of the region might bid defiance to disease.

Seven miles more of light work upon a descending grade along the little Youghiogheny brings the railroad to Oaklands, a pretty little village, which has sprung up on the roadside, upon the prospective advantages of the depo. This depot from its proximity to the north-western turnpike, [from Winchester, Va., to Parkenrburgh, on the Ohio,] which here is but ten miles off, as well as from the heavy live-stock transportation looked form the vicinity at the proper season, will be a station of considerable importance. The local passenger travel will also be of account, as Oaklands is without doubt to be much frequented during the summer by invalids and others, seeking the peculiar pleasure or esnse of relief, in exchanging the confinment of the city for the real luxuries of a country life and sports, and excellent country fare. The time will come, as your city advances in its rapid course of wealth and prosperity when a glade villa will be considered an indespensable accessory to a fashionable establishment, and certainly a common sense one.

Two miles from Oaklands, the railroad is upon the bank of the "Big Yough," or main Youghiogheny, it was deemed expedient in the location of this portion of the line to strike the river above the fork of the little Yough. To avoid two bridges, one over each stream, the Little Yough is to be turned from its present channel into an old branch channel which comes into the Big Yough above the site selected for the railroad bridge. This bridge crosses the river with a single span of 180 feet; the masonry of the bridge consists of two sandstone abutments, 44 feet face and 21 feet high, with two wing walls running back at right angles 26 feet; and upon each of these abutments stand four pillars ascending from a base 4 feet square, with a slight batter to a height of 18 feet. A single stone forms each course of the pillar, and the last slightly projecting is the cap-stone—these stones are to be dowelled upon the top of each of these pillars and extending to the opposite one, will rest a large "solid built beam," the top stretcher of the bridge. The suspension chains four to each rib, passing through the ends of these beams, swing down in a catcnery curve, and running through iron castings set between the scantling pieces forming the queen-posts, [which at short intervals drop from the top stretcher to the floor timbers,] make each casting a point of support for each panel. At the lower end of the queen-posts, a line of horizontal struts runs from abutment to abutment, each strut being firmly joined at the ends to each post; and just above on the inside of the post, are fastened the sleepers, which pass across connecting the two ribs and supplying the flooring timbers and on which lie the string timbers for the rails. The structure is further finished by diagonal—or panel, braces between the posts. As there are to be four pillars, and four beams and sets of chains, there will in fact be two distinct bridges [accommodating a double track] which placed in juxtaposition will mutually contribute to the firmness and security of the whole structure. From this description, necessarily meagre—it will be observed, that the plan is novel, at least in this country, and presents a beautiful application of the suspension principle to railroad bridges. The second bridge for the second track will not be immediately erected—but hereafter when required.

Eight miles below this bridge [to the north,] the Youghiogheny passes over a ledge of rocks, in a cascade 20 feet perpendicular depth, called the "Swallow Falls," some two hundred yards below Muddy Creek comes in from the west with a fall of 60 feet; and lower down still, there is Deep Creek, from the eastward, with a descent of 200 feet, in the last 2,500. The striking beauty of the scenery around will give this attractive spot a prominent place in the tourist's note-book.

Crossing the Youghiogheny, the road takes the left bank of that river for two miles, and passes over into the Snowy Creek Glade. Four miles on, and about 60 miles from Cumberland, the state line is passed; and a quarter of a mile further Snowy Creek. The road is now in Virginia and is rising upon an easy grade to the Cranberry summit, at a height of 2,550 feet above the tide-water, divides the Youghiogheny waters from those of the Cheat river. It is at the end of the second division of the railroad, and the point where the road commences its descent to Cheat river.

The whole work of which mention is made in this communication, comprises the second division and as such is in the hands of Mr. George Hoffman, assistant under Mr. M. M. Latrobe, the engineer in chief.—The subordinate corps is distributed among five residencies:—Mr. S. T. Shipley, resident engineer, upon the 1st, and Mr. W. M. Owens, assistant, Mr. John Dale, on the second, and Messrs. J. B. Bordly and J. C. Cook, assistants Mr. Geo. W. Smith, on the 3rd, Mr. E. M. O'Donnell assistant, Mr. Eisteldt, on the 4th, and Messrs. McCarthy and Goldsborough, assistants, and Mr. C. D. Hollins upon the 5th, and Messers. Nickerson and Dorsey, assistants. The work upon this division, though in the main heavy, is well advanced, Several of the Savage and Crabtree sections are already finished, the ballast for the track delivered, and the crossties being cut. Of the more important bridges, the masonry is either done or nearly so; and the iron superstructure work, it is understood is in the course of preparation at the company's shops in Baltimore. At the Youghiogheny bridge, the abutments are finished and the pillars well under way; and the iimebr work progressing at the same pace. It is the intention of the chief engineer that the road shall be opened if practicable to the glades by the close of next summer, and there appears a fair prospect that this may be done.

Upon the first division the work has been pressed on with energy. The force upon the unfinished sections have been largely increased under recent measures adopted with that view, the more effectually to secure the completion of the road to Savage river by the time appointed; the viaduct at Cumberland your paper has already announced as finished; the bridge over the Potomac, on the 21st section is advancing as fast as a full complement of men and favorable weather [for the season] can do

for work of the kind; and together with the viaduct over the same river on the 30th section, will certainly be in readiness for the track when it reaches them.

In regard to the progress of the work, west of the Cranberry summit, there are gritafying accounts. The 3rd division, [from the summit to Valley River,] which was commenced eighteen months since and upon which there are several of the heaviest sections on the line has been advancing quite as fast and in portions faster than could have been anticipated. The rest of the work from the Valley river to Wheeling, upon the 4th, 5th and 6th divisions, is now all under contract. The final guaranty for the completion of the Baltimore and Ohio Railroad is thus given. The time of completion alone remains the question; and in the face of the various obstacles which have been presented to the uniform prosecution of the work in its entire length, and in a measure unforseen, when the chief engineer first suggested "1852," the great desideratum may yet be accomplished in the course of that year. "M."

Additional Returns of New York Railroads

NEW YORK AND ERIE RAILROAD.

The following report of the New York and Erie Railroad embraces a period of nine months, ending Sept. 30, 1850.

Capital stock as by charter	$10,500,000 00
Amount of stock subscribed	6,031,100 00
Amount paid in as by last report	5,778,891 00
Total amount now paid in of capital stock	5,801,285 29
Funded debt as by last report	5,839 918 90
Total amount now of funded debt	9,856,568 90
The amount now of oflating debt	2,475,864 64
Floating debt as per last report	2,481,747 41
Total amount now of funded and floating debt	12,332,433 54
Average rate of interest on funded debt 7 per ct.	
Cost of graduation and masonry to present time	7,180,422 51
Cost of superstructure including iron to present time	3,612,435 92
Cost of passenger and freight stations, buildings, and fixtures to present time	377,458 46
Cost of land, land damages & fences	742,492 44
Cost of locomotives & fixtures snow plows	567,312 64
Cost of passenger and baggage cars	108,458 21
Cost of freight and other cars	489,718 98
Cost of engineering and agencies	374,200 21
Total cost of road and equipment	$20,323,581 03

Length of road 464 miles, length of road laid 337 miles: length of branches 19 miles; weight of rail 56 and 60 lbs per yard. The company own 12 engine houses and shops, 65 engines, 38 passenger & 5 emigrant cars, 17 baggage, and 784 freight cars. Miles run by passenger trains 04,156, by freight trains 299,456. Passengers, carried over roads 414,727; freight 131,311 tons.

Expenses of repairs of road-bed and railway, excepting iron	$110,389 11
Repairs of buildings and bridges	11,676 76
Taxes on real estate	5,080 26
Total expense of maintaining road	$127,146 13
Expenses of repairing engines & tenders	25,909 84
Expense of repairs of passenger and baggage cars	12,078 81
Expenses of repairs of freight cars	9,202 72
Expenses of repairs of tools and machinery in shop	3,741 01
Incidental expenses, including oil, fuel, clerks, watchmen etc.,	4,881 26
Total expense of repairs of machinery	$55,813 64
Offices, expenses, stationery, etc	11,611 56
Expenses of agents, land clerks, etc.	39,546 71
Expenses of labor loading and unloading freight	45.615 88
Rent of Chemung branch	25,500 00
Wood and water, station attendance	2,444 56
Conductors baggage and breakmen,	67,609 39
Engineer and firemen	40,936 14
Fuel cost and labor preparing	42,120 46
Oil and mastic for engines and cars,	32,121 98
Damages for injuries to persons, fire, etc	16,737 99
Contingencies	11,208 92
Total expenses of operating the road	$335,452 89
Earnings from passengers and mails, including 1,529 63 for rent.	541,114 50
Earnings from freight	522,835 71
	$1,063,950 27
Receipts from passengers and mails including rent as above	541,114 56
Receipts from freight	520,019 86
Total receipts	$1,064,134 42
Payments for transportation expenses	518,412 66
Payments for interest on bonds etc	421,751 34
Payment two of interest on stock, Jan. 1 and July 1	339,855 37
Earnings in addition to the above by ferry from passengers	33,565 90
Earnings from freight	41,859 29
Total earnings by ferry	$75,425 19
Receipts in addition to above by ferry from passengers	33,565 90
Receipts in addition to the above by ferry from freight	41,859 29
Total receipts by ferry	$75,425 19
Payments for H. River ferry steamboats, etc	$105,535 40

UTICA AND SCHNECTADY RAILROAD.

Capital stock as by charter and subscribed	$3,360,000 00
Total amount paid in	3,494,010 00
Total amount now of funded debt	102,500 00
Total amount now of funded and floating debt	102,500 00
Average rate on funded debt, 7 per ct. per annum.	
Cost of road and equipment	4,143,918 00

Length of road 78 miles including sliding and double track 88. Weight of rail 65 lbs per yard; the company own 4 engine houses and shops, 19 engines, and 200 freight cars. Miles run by passenger trains, 229,940, by freight 93,580. Passengers carried over road 370,988, freight 98,695 tons.

Expense of maintaining road	$72,750,26
Expense of repairs of machinery	71,307 32
Expense of operating road	164,116 28
Total expenses of road	308,183 76
Earnings from passengers	595,472 27
Earnings from freight	255,668 47
Earnings from other sources including sale of old iron, etc	72,285 25
Total earnings	$923,425 99
Receipts from passengers	595.472 27
Receipts from freight	235,748 10
Receipts from other sourers including sale of engine, and old iron	72,285 25
Total receipts	$903,505 71
Payments for transportation expenses	308,173 86
Payments for interest	3,687 50
Payments for dividends	356,000 00
Total payments	$667,761 26

NORTHERN RAILROAD.

The information contained in the following report must necessarily be meager and unsatisfactory so far as it relates to the "working of the road," from the fact that but 44 miles of the road from Rouse's Point to Chateaugay, was put in operation from the first of June to the first of October, 1850. The receipts, however were larger than was anticipated, as this portion of the road passes for more than half the distance through the Chateaugay woods. The entire road was opened on the 1st October.

Capital stk. as by charter subscribed	$2,000,000 00
Amount paid in as by last report	1,329,517 50
Total amount now paid in of stock	1,334,612 91
Funded debt as by last report	388,100 00
Total amount of funded debt	1,081,232 50
Floating debt as per last report	313,957 03
Amount now of floating debt	547,650 04
Total amount now of funded and floating debt	1,627,685 54
Average rate of interest on debt 7 per ct per ann.	
Cost of road and equipment	$2.979,937 31

Length of road 118 miles. Weight of rail 58 to 61 lbs per yard. The company own 6 engine houses and shops, 6 first and two second class cars; 2 baggage 2 freight and a number of gravel cars, &c.—Miles run by passenger trains 10,332: passengers carried 5,922, freight carried 12,073 tuns.

Expense of maintaining road	$2,347 59
Expense of repairs of machinery	3,181 36
Expense of operating the road, etc	6,788 71
Total expense	$11,317 66
Earnings from passengers	6,623 16
Earnings from freight. Individuals 11,187 90, Co. 9,606	58.20,794 27
Earnings from other sources	347 69
Total earnings	$27,765 15
Total receipts	$16,876 70
Payments for transportation expenses	11,317 66

CANADAIGUA AND CORNING RAILROAD.

Amount of capital as by charter	$1600,000 00
Amount of stock subscribed	445,800 00
Amount of capital paid in	64,457 62
Amount expended for graduation and masonry	21,686 08
Amount expended for bridges	56 700
Amount expended for land and land damages	18,699 85
Amount expended for engineering	4.075 61
Amount expended for contingent charges	226 19
Total amount expended	$45,254 73

The length of the road is about 46 miles. No part of the road is completed.

BUFFALO AND STATE LINE RAILROAD.

Amount of capital stk. as by charter	$1,000,000 00
Amount of capital subscribed	1,000,000 00
Amount of stock now paid in	31,932 45
Amount expended in grading and masonry	18,365 45
Amount expended for bridges	1,656 00
Amount expended for land, land damages and fences	5,589 37
Amount expended for engineering and agencies	6,509 22
Total amount expended	$32,120 15

Length of road 67 miles. Received for interest, $283 81.

SACKET'S HARBOR & ELLSBURGH RAILROAD,

No part of this road is in operation.

Capital stk. as by charter subscribed	$1,500,000 06
Capital stock paid in	24,778 28
Amount expended for graduation and masonry	18,639 66
Amount expended for superstructure.	286,65
Amount expended in fencing	427,72
Amount expended for engineering	2,567 79
Amount expended for contingent expenses	957 15
Total expended	$22,888 97

BUFFALO AND NIAGARA FALLS RAILROAD.

Capital stk. as by charter subscribed.	$393,750 00
Amount paid in as by last report	256,255 00
Total amount now paid in of capital stock	367,796 00
Funded debt as by last report	46,670 00
Total amount now of funded debt	21,670 00
Floating debt as per last report	25,886 00
Total amount now of floating debt	12,495 00
Total amount now of funded and floating debt	34,165 00
Average rate of interest on funded debt 7 per cent.	
Cost of road and equipment.	428,251 34

Length of road 22 miles. Weight of rail 57 lbs. lds per yard. The company own two engine house and shops; 5 engines, 6 first class, 5 emigrant, 3 baggage and 7 freight cars: miles run by passenger trains, 104 miles. Number of emgers carried 124,683.

Freight not given.

Expense of maintaining road	$1,480 89
Expense of repairs of machinery	5,215 83
Expense of operating the road etc	10,521 94
Total expense	$17,218 66

Earnings from passengers.....	67,979 49
Earnings from freight.....	4,316 58
Earnings from other sources.....	1,008 00
Total earnings.....	$73,296 07

The receipts from passengers and freight are reported the same as given in earnings, but "from other sources," tbey are put down at $31,937 10, which is supposed to be a part of the construction item.

No transportation expenses are given, but payments for Interest is put at $2,963, and Dividends $25,421.

English Institution of Mechanical Engineers.

OCTOBER 23, 1850.

J. E. M'CONNELL, ESQ., VICE-PRESIDENT, IN THE CHAIR.

"On the form of Railway Axles," by Mr. Thos. Thorneycroft, of Wolverhampton.

Since the reading of the paper on the form of railway axles, the author has had his attention specially directed to some of those points which it was the object of the paper to introduce and support.

In that paper, as well as in others on the same subject, a parallel had been drawn between the railway axle and the girder, as being somewhat alike in principle. Admitting the correctness of this opinion, the question would arise, why is the principle upon which every girder is made departed from in the case of the axle? If it is pleaded that the close proximity of the prop and load, and these acting at the extreme ends of the axle, has justified this departure from the girder principle, then it might be expected that girders loaded under very similar circumstances would, in like manner, be reduced in the middle; but not so. As a case in point, reference might be made to the girders which suspended those parts of the Britannia tubes which pass through the towers, where the prop and load are at the extreme ends of the girder, and within a few inches of each other; yet these girders are parallel, although for a distance equal to the width of the tube there is no lead whatever.

The principal reason which has been assigned for reducing axles in the middle is the supposition that, when parallel, the effect of the forces from lateral and vertical percussion, tends to break the axle behind the wheel—that being the point where the greatest amount of fractures have taken place. The author is however of opinion, that the simple and only cause of the fracture of axles at that particular point is the shoulder, which it has been the practice to leave on the axle as a stop to the wheel. Some of the experiments now before the Institution, prove at least that where a shoulder exists the strength of the axle is reduced more than one-half, which affords presumptive proof that there are other causes in constant operation (beside the arrestment of the wave of vibration), inducing fracture at that particular point.

It has now become the opinion of some engineers, that in every case of collision, or other derangements of a train when in motion, that axles reduced smaller in the middle are unable to keep their form, and that such axles exposed to violent lateral blows are easily sent beyond the limit of their elasticity; the consequence is, the wheels leave the rails, and contribute directly to greater damage than would ensue were the train to keep the line.

A short time ago, some disarrangement of a train took place on the Shrewsbury and Birmingham Railway, in which case three or four carriages were nearly broken to pieces; the axles of these carriages were all reduced in the middle, and nearly all of them were more or less bent, while some of the carriages in the same train with parallel axles suffered little or no damage, and there was not one parallel axle bent in the slightest degree. Such a result might have been anticipated, when it is remembered that the resistance which the middle of an axle offers to a bending force is as the cube of its diameter. Hence, if we take the diameter of the centre of a reduced axle at 2¼ inches, the cube of which is 18·08, and then take the diameter of a parallel axle of the same weight, which would be 3¼ inches, the cube of which is 34·32, we find that, with the same quantity of material, the parallel axle has the advantage of the reduced one, to resist all the forces to which axles are subject by 90 per cent. So early as 1842, the Mechanical Section of the British Association had the subject of the fracture of railway axles fully discussed, after a number of excellent remarks from Mr. Nasmyth on the different causes which tended to destroy the fibre of iron, and render it brittle. He observed, that simply nicking iron to the extent of 1-100th of the area took away 1-10th of its strength. Mr. Fairbairn at the same time expressed his opinion, that the two chief causes of the breakage of railway axles were bending and percussion, these changed the fibrous to the chrystaline structure. In a paper read by Mr. J. O. York before the Institution of Civil Engineers in 1843, reference was made to the fleeting bars of iron used as levers for turning the large screws for forcing forward the shield in the Thames Tunnel, that they never lasted longer than three or four weeks, although very strong, and made from the best materials; and that, when fracture took place, they exhibited a bright chrystalized appearance, clearly showing that oft-repeated bending without any concussion, had destroyed the fibre of the iron and rendered it quite brittle.

A mass of evidence might be adduced to prove, that the internal structure of the iron undergoes no change, unless there be a change of form; and that simple jarring or vibration will not destroy the fibres of iron, whereas bending it, if long continued, will change the most fibrous iron into chrystaline, —therefore the author would fully subscribe to the opinion of one of the railway commissioners, who has stated, "that it was of importance to avoid deflection on railway axles, as deflection was almost as fatal as fracture in causing accidents."

From the Merchant's Magazine.

Internal Improvements of the State of New York.

A SKETCH OF THE RISE, PROGRESS, AND PRESENT CONDITION OF INTERNAL IMPROVEMENTS IN THE STATE OF NEW YORK.

Continued from page 805 of Vol. 23.

Wm. L. Marcy was chosen Governor in 1832, and in his first message, in January, 1833, he laid down a rule, which, if fairly carried out by the Legislature, was well calculated to preserve a proper equilibrium between the progress of internal improvements, and a wholesome condition of the finances. He said:—"In my judgment, the first object of inquiry should be, to ascertain the amount of expenditure a proposed work would involve; and the next, the amount of revenue that may be derived from it. If the revenue promises to be sufficient to keep it in repair when finished, to defray the expenses of superintendence, and the collection of tolls, and meet the claims for interest on the capital expended, sound policy requires that it should be constructed." "Should the proposed work be connected with those now in operation, the effect it might have on the productiveness of them should also be regarded, and to a reasonable extent, influence your decision." In reference to the Chenango Canal, he stated that it passed through an "interesting section of the State;" commended it to the favorable notice of the Legislature, and expressed a strong desire that its merits, if brought within the rules laid down, might induce them to authorize its construction. Mr. Stilwell, chairman of the canal committee, made a favorable report in favor of the Chenango Canal, and an act passed the House for its construction, by a vote of 77 to 11, and the Senate by a vote of 17 to 10.

In regard to the general fund the Governor said: "At the period when the State tax was discontinued, I had the charge of the financial department of the government. Disapproving of the policy of impairing the general fund, I recommended the continuance of the tax; and in subsequent years I deemed it my duty to urge a return to it. It would be useless to attempt now to determine whether the policy thus recommended, and I believe every year since urged upon the Legislature by the head of that department, and for the three last years by the executive, was preferable to the course which has been pursued. We are now brought to a condition in which the expedient heretofore used for meeting the demands of the Treasury can no longer be resorted to, and a new system of revenue must be devised." The expedient referred to, was the act of using up the capital of the general fund to meet the annual expense of the Treasury, and that capital, at the time of making the message, was nearly exhausted.

The message referred to the movement commenced in the preceding year, for releasing the auction and salt duties from the canal fund by an amendment of the constitution, and restoring them to the general fund; and urged the justice of reimbursing the Treasury for all advances made to it from the canals, as soon as the canal debt should be paid.

Acts were passed at this session incorporating six railroads, three of which have been constructed or commenced, viz:—Buffalo and Black Rock, Utica and Schenactady, and Whitehall and Rutland.

A resolution was passed confirming an amendment of the constitution proposed in the preceding year, for reducing the tax on salt manufactured in the western district, from 12 to 6 cents per bushel.

An act passed for an additional canal commissioner, and Michael Hoffman was appointed by the Legislature. At the same session A. C. Flagg was chosen Controller, in place of Silas Wright, who was elected Senator, and John A. Dix, was appointed Secretary of State.

Gov. Marcy, in his annual message in 1834, after alluding to the rapid increase of the trade of the lakes and canals, adds:—"It has already become quite evident that the capacity of the Erie Canal will not much longer be adequate to the exigency of the business on it. The improvements which soon will be required are double locks, to facilitate the passage of boats, and the enlargement of the canal in its width and depth."

The canal commissioners made a special communication to the Assembly on the 29th of January, in favor of doubling the locks east of Syracuse and re-building the locks at Rochester. An act passed (chap. 312) authorizing the canal commissioners "to construct a second set of lift locks, of such dimensions as they shall deem proper, on the Erie Canal, from Albany to Syracuse." Preparations were made in the summer of 1834 to carry this act into effect, but at the session of 1835, an act passed for enlarging the Erie Canal in its whole extent, and the act of 1834 was suspended. Also, to reconstruct the aqueduct across the Genesee river, at Rochester; with forty feet water-way. Another act was passed authorizing the Governor to appoint an engineer to survey a route for a railroad from New York through the southern tier of counties to Lake Erie, and appropriated $15,000 to be paid from the Treasury. Acts were also passed incorporating ten railroads, five of which have been constructed, viz:—Auburn and Syracuse, Buffalo and Niagara Falls, Long Island, Lockport and Niagara Falls, and Saratoga and Washington. Acts were passed for the survey of a ship canal from Greenbush to New Baltimore, on the plan of E. C. Genet; also a canal from the High Falls of the Black River to the Erie Canal; from Rochester to Olean, and a branch to Dansville; and a resolution for the survey of the inlet from the head of Cayuga Lake to Ithaca.

In the first annual report made by A. C. Flagg as Controller, in 1834, he recommended a settlement of the account between the Erie and Champlain Canal Fund and the general fund. The report said:—"The canal fund has actually received from auction and salt duties, from the year 1817, to the 30th September, 1833, the sum of $4,736.017 27. If the canals had not been aided by these auxiliary funds, and money had been loaned in lieu of them at the rate of 5 per cent interest, compounded annually, it would make a total of $6,671,554 64, as the actual amount of benefit to the Erie and Champlain Canal Fund, from the receipts of auction and salt duties." The report recommended that the canal fund should be charged with the amount it had received from the general fund, with interest, and that the constitution should be so amended as to authorize the commissioners of the canal fund to commence paying the instalments to the Treasury, as soon as a sufficient sum had been collected from the canal revenues, to pay the canal debt. The Committee on Ways and Means of the Assembly, consisting of Melancthon Wheeler, M. Myers, Amasa J. Parker, Asa, Cook, Jr., and M. H. Cash, brought in a bill to carry this recommendation into effect, but it did not become a law. This bill pro-

posed to charge to the canal fund, for the benefit of the general fund, something more than $5,500,000, with interest thereafter at the rate of 5 per cent per annum. This would have given to the general fund about the amount which is secured to it by the 7th article of the new constitution.

The Legislature, instead of adopting this course, passed a resolution to amend the constitution, so as to restore the auction and salt duties to the general fund, as soon as a sum sufficient to pay the canal debt should be collected and safely invested. This amendment was consummated in 1835, and to this extent furnished aid to the general fund, on which the deficiencies of the latteral canals were charged.

The message of Gov. Marcy, in 1835, after alluding to the act of the previous session for doubling the locks on the Erie Canal, says:—"I regret that this measure was not accompanied with another almost equally necessary, providing for the enlargement of the capacity of the canal. For I deem it important that the new locks should be made with reference to the latter improvement. As the commissioners have not yet begun to construct them, it is worthy of your consideration whether you should not now authorize this enlargement, and direct the new locks to be made in conformity thereto." Referring to the proposition to restore the auction and salt duties to the general fund, the message said:—"These sources have contributed to the canal fund $5,000,000; and you ought now to settle the question, whether any and what part shall be returned to the Treasury. If it shall be determined that none of it shall be refunded, then, in my opinion, the levying of a general tax is inevitable, and should not be delayed."

Benjamin Wright, who had been selected by the Governor to survey the route of a railroad from the Hudson to Lake Erie, made a report, (Assembly Doc. No. 107,) in which the expense of this road, 483 miles long, was estimated to cost $4,762,260, not including land damages.

The canal commissioners made a special report to the Assembly, (Doc. 143,) on the 30th of January, giving an estimate of $1,167,000 for doubling the locks from Albany to Syracuse, and $242,000 for constructing a new aqueduct at Rochester; at the same time, they recommended the simultaneous enlargement of the Erie Canal. "The settlement of these points," says the report, "decides the future utility of the canal. If in the spirit of an enlightened and liberal policy, adequate capacity shall be afforded to the canal, our western brethren will be accommodated and their comforts increased; a rich and increasing commerce will excite and reward the industry, enterprise, and skill of our citizens in agriculture, arts and commerce; and the State, by affording the utmost facility to that intercourse of trade, which improves the moral and social relations of civilized life, will at once confer on its own citizens the most lasting benefits, and on all others in the only measure in which a bountiful Providence permits states to do them good, the greatest benefits and blessings." This report was signed by S. Van Rensselaer, Michael Hoffman, S. Young, Wm. C. Bouck, and Jonas Earll, Jun.

In the Assembly the subject was referred to the canal committee, of which David Wager, of Oneida, was chairman. This committee made a report in accordance with the views of the Governor and commissioners on the 5th of March, and brought in a bill. Appended to this report are statements of John B. Jervis, and N. S. Roberts, showing the advantages of an enlarged canal over one of the present size. The committee stated that in eight years the business on the canal had nearly doubled, although it was estimated that one-seventeenth part only, of the trade on the Erie Canal in 1834, was from without the limits of the State. The report alluded to the competition of Canada, Pennsylvania, &c., and stated that of all these rivals, "Virginia might be the most powerful; for through that State, nature has traced the most direct and easy course from the far west to the Atlantic." The remedy recommended is to widen and deepen the Erie Canal, and "should the improvements now making by the British government in the St. Lawrence, tend to divert the commerce of the west, then increase the capacity of the Oswego Canal, to an extent equal to the increase of the Erie Canal."

When the subject of doubling the locks to Syracuse was under consideration in 1831, the inhabitants of Oswego sent a memorial to the Legislature in favor of a ship canal from Oswego to the Hudson, by way of the Oneida and Oswego rivers. This was referred to a committee, of which O. Robinson was chairman, who made a favorable report and introduced a bill. In February, 1835, a meeting was held in Utica, at which the Mayor presided, in relation to a ship canal from Oswego to Albany, and a memorial was prepared on the subject and sent to the Legislature, accompanied by a survey of the route from Utica to Oswego, by E. F. Johnson. This survey extended only from Oswego to Utica. Mr. Johnson proposed a canal of the depth of eight feet, and a breadth at surface of 90 feet; the banks faced with stone, and the locks 130 feet long and 30 feet wide, being double the width of the old Erie Canal locks, and designed to enable canal boats to pass them by pairs. The route proposed was to enlarge the Erie Canal from Utica to Fort Bull, sixteen and a half miles; then passing on the north side of Wood Creek ten miles to Fish Creek, and following the channel of the latter stream to Oneida Lake; thence twenty-two miles by the lake to its outlet, and by the Oneida river nineteen miles to Three Rivers Point, and from this point along the route of the Oswego Canal to Lake Ontario—whole distance from Utica to Oswego, ninety-two miles, fifty-six being lake and river navigation. The canal to be navigated by steamboats, and also to have a tow-path for using canal boats; and to avoid any transhipment, vessels which navigated the lakes and could pass the Welland Canal, were intended to pass the ship canal to the Hudson and New York. The cost of the ship canal from Utica to Oswego, was estimated at $1,131,989.

To be continued.

Reduction of Tolls and Enlargement of the Erie Canal.

To the Comptroller of the State of New York:

The opinion is generally entertained, by those best qualified to judge of such a question, *that the trade of the Erie Canal is in danger of being diverted, to a degree that will seriously impair the revenue of the state, and greatly delay, if it does not entirely defeat, the enlargement, and the lateral canals.*—Whether this opinion is justified by facts, is the question now to be considered. On its solution depends a conclusion as to the feasibility of the proposed reduction of tolls, and the plan for the early completion of the canals.

There is an aggregate carrying trade between the east and west, for which, or portions of which, the Erie Canal, the New York Central railroad, the Ogdensburg railroad, the Pennsylvania canals and railroads, and the Mississippi river, are now competing. Within two years, the great New York and Erie railway will enter the list as a competitor. The strife will be great, for the prize is valuable, and the palm of success will be awarded to *enlightened enterprise.* It requires no prophet to foretell that the *lowest charge* will win the *largest trade.*. This trade is sensitive on the subject of *cost*, to such a degree that, without any limitation or exception, it will all seek that route to its destination, which offers safety and dispatch at the lowest charges. Time and risk are elements of cost. In regard to these elements, railroads, at all times, and under all circumstances, have the advantage of canals. For the purpose of ascertaining the respective advantages of these several routes, the cost of transporting a barrel of flour is considered a fair illustration of the cost of transporting all freights.

Detroit at the west, and Boston and New York at the east, are taken as the points between which the freights under consideration are supposed to be carried.

By the Erie canal route, it costs to transport a barrel of flour from Detroit to Boston, as follows:

Lake freights	15 cents.
Canal do. to Albany	25 "
do Tolls	31 "
Railroad charges from Albany to Boston, 200 miles	28 "
Total	99 "

By the Ogdensburg route:—

Lake freight	30 "
Railroad charges, 400 miles	60 "
Total	90

Showing 9 cents on each barrel of flour advantage of the Ogdensburg, over the canal route.

The railroad from Albany to Boston, 200 miles long, charges 30 cents per barrel. The railroad from Ogdensburg to Boston, 400 miles long, charges 60 cents—is composed of several corporations, and has a water carriage, or ferry, across Lake Champlain. The New York and Erie railroad, when complete, will be not more than 450 miles in length, has a wide track, and will doubtless carry for about 60 cents per barrel.

By the Erie canal route, it costs to transport a barrel of flour from Detroit to New York, as follows:—

Lake freight	15 cents.
Canal do	25 "
do Tolls	31 "
River freight	8 "
Total	79

From Detroit to New York, by the New York and Erie railroad:

Lake freight	15 cents.
Railroad charges	60 "
Total	75 "

Showing 4 cents on each barrel of flour advantage of the railroad over the canal route, besides a saving of full ten days' time, and the risk or expense of insurance.

In the face of such an unequal competition, is there not danger, great danger, that the canal will lose largely, perhaps fatally, of the trade and revenue it has hitherto enjoyed. But, fortunately, there is a remedy, safe and certain, if our financial officers have the courage and wisdom to apply it, and in time.

A reduction of the toll proposed equal to ten cents per barrel on freight passing from Lake Erie to tide water, until 1853, and after that period a reduction equal to 15 cents per barrel, will enable the canal to carry at the following prices, until 1853:—

From Detroit to New York	69 cents.
After that period, about	64 "
From Detroit to Boston	89 "
until 1853; after that period, about	85 "

per barrel.

With such prices, it is submitted that the canal could retain and increase, both its trade and the revenues of the state. Nor would there be any danger of the revenue falling below the point necessary to accumulate a sufficient sinking fund to sustain the credit of the certificates issued to pay for completing the canals. Whereas, under the present rates of toll, there is no means of calculating the extent of the diversion of trade, and the consequent dilapidation of the revenue.

Diversion of trade by the Ogdensburg railroad last year, was an apprehension based upon doubtful speculation—it has become, this year, a startling fact, demonstrated by actual achievement. It would seem there is little ground for hope, that there will be found any limit to its capacity to divert trade from the canal, until its full capacity to carry freight is reached.

With canal tolls at the present rates, it may happen during the next season, (if the New England markets require so much) that one million of barrels of flour will be diverted from the canal at an expense to the treasury of over $300,000.

Citizens of Buffalo are shipping flour by that route to Boston, and even now, products which formerly passed from Oswego on the canal to Albany and Troy, is now being received at Troy through the Northern canal, thus avoiding the payment of tolls on about one hundred and ten miles of canal.

These facts, and others equally important, will, it is hoped, admonish those having charge of the finances of the state, that bold, decisive and prompt action, guided by wisdom and prudence, is required to rescue the business and revenues of the state, from the consequences of a dangerous if not fatal diversion of trade.—*Buffalo Express.*